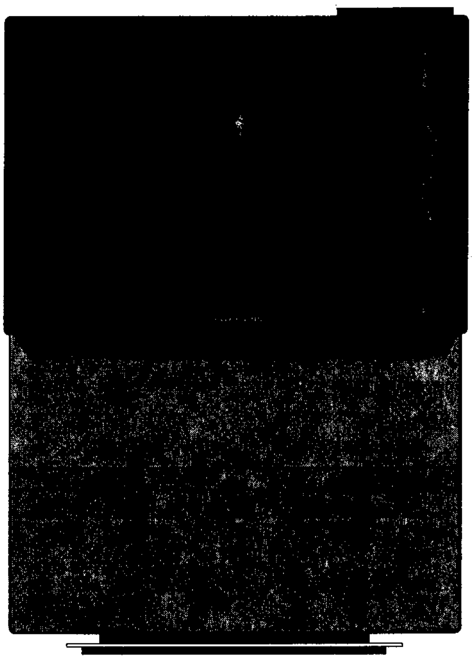
Bang&Olufsen

BeoVision Avant – TV

**Type 8111, 8112, 8115, 8116, 8133,
8144, 8166, 8177, 8186**



SERVICE MANUAL

Circuit Description

3540226 Danish
3540227 English
3540228 German
3540229 French
3540238 Dutch

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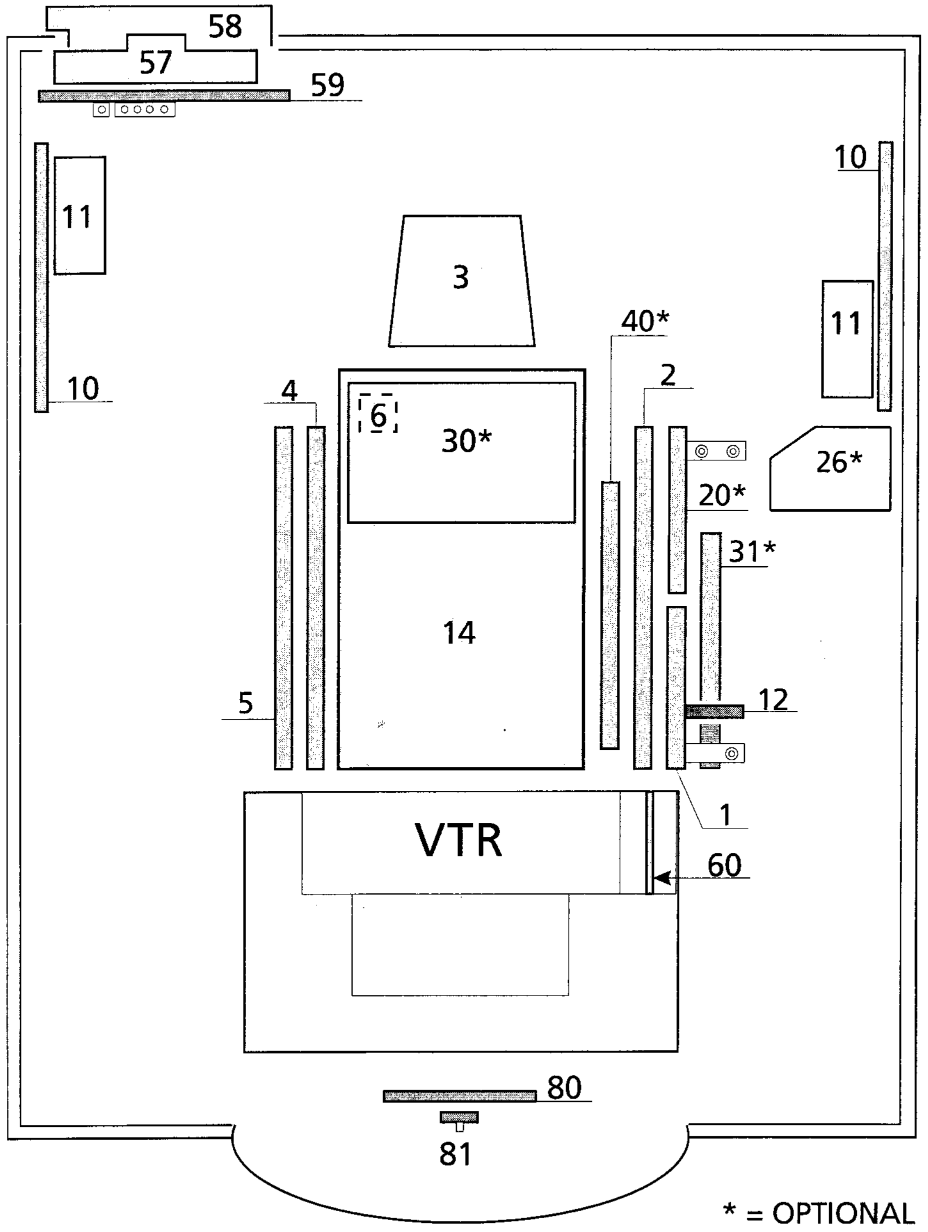
NB!
The documentation for Picture-in-Picture PCB 40 and Satellite Positioner PCB 26 will be send as a supplement to this service manual when ready.

Survey of modules



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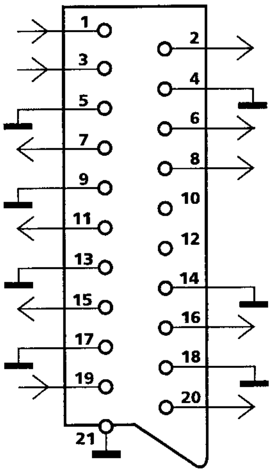
SPECIFICATION GUIDELINES FOR SERVICE USE	**BeoVision Avant**
CTV system	* See type survey
Cabinet finish	High-gloss lacquer: Pearly black, Metallic grey,
	Pearly red, Pearly green, Pearly blue
Picture tube / Visual picture	72 cm - 28" / 66 cm - 26" (16:9)
	Black Line, Black Matrix
Vision Clear	
Contrast screen	Grey glass
Colour Transient Improvement	Wideband CTI
	Adaptive & Dynamic Luminance Peaking with Noise Reduction
	Scan Velocity Modulation
	Automatic Cut-Off
	Automatic Picture Control
Operation	Beo4 Terminal (included)
	Local Control
TV tuner range	45-860 MHz: VHF, S-band, Hyper-band, UHF
No. of TV programmes	99
Station identification	Program list
Picture formats	4 Automatic selected + 2 Manual selected
Teletext	FLOF, 6 alphabet, 4 memory pages
Stereo decoder	* Nicam + A2 + A2 dual language
A2	
Channel separation	> 26 dB
Signal/noise ratio	> 50 dB weighted
NICAM (option)	
Channel separation	> 50 dB
Signal/noise ratio	> 70 dB weighted in audio mode, > 50 dB weighted in TV mode
Sound	
Speaker system	2 x Bass reflex (Net. volume 3.5 litres)
Woofer	11.5 cm (4½")
Tweeter	1.8 cm (3/4")
Sound pressure level	97 dB
Distortion 250 - 1,000 Hz	< 2% 90 dB SPL, 1m
Distortion 1,000 - 5,000 Hz	< 1.5% 90 dB SPL, 1m
Effective frequency range	50 - 20,000 Hz
Bass control	±12 dB
Treble control	±12 dB
Bass equalizer	Adaptive (ABL)
Crossover principle	Active crossover network, 24 dB/octav, Linkwitz/Riley
Crossover frequency	4500 Hz
Motorized Stand	±35 degrees turning range
	Two memory positions + neutral memory position
Other data	
Mains voltage	180 - 265 volts 50/60 Hz
Power consumption	70 watts in TV mode
Power consumption Stand-by	< 3 watts
Dimensions W x H x D/weight	73 x 103 x 58 cm/68 kg

Satellite (option)	
Sat tuner range	950-2050 MHz
Sat system tunings range &	
frequency display readout	10,700 - 12,750 MHz
No. of Satellite programmes	119
Tuner input level	-65 to -30 dBm, 75 ohm
Sound	
Frequency range	20 Hz - 15 kHz
Main mono	5.80 MHz (J17 deemphasis)
	6.50 MHz / 6.65 MHz (50 µsec deemphasis)
Bandwidth	280 kHz
Expanded sub mono	7.02 MHz / 7.20 MHz / 7.38 MHz / 7.56 MHz / 7.74 MHz /
	7.92 MHz / 8.10 MHz / 8.28 MHz
Bandwidth	130 kHz
Deemphasis	Expanded
Stereo	L 7.02 MHz, R 7.20 MHz / L 7.38 MHz, R 7.56 MHz /
	L 7.74 MHz, R 7.92 MHz / L 8.10 MHz, R 8.28 MHz
Bandwidth	130 kHz
Deemphasis	Expanded
ODU	
LNB support	Dupole
Polarity select	14/18 volt or tone switch on coax
Band switch	14/18 volt or tone switch on coax
Dolby Surround (option)	Dolby Pro Logic
Sound modes	Sound 1: Stereo in internal speakers
	Sound 2: Stereo in Power Link front speakers
	Sound 3: Dolby left/right in Power Link front speakers
	Center in internal speakers
	Sound 4: Stereo in Power Link front & rear speakers
	Sound 5: Center in internal speakers
	Dolby left/right in Power Link front speakers
	Dolby rear in Power Link rear speakers
Accessories	
NICAM module	1414400 system B/G/I/L
Satellite module	1414200
Satellite Positioner module	1414300
Power Positioner module	1414500
Picture in Picture module	1414100
Dolby Surround module	1414000
AV2 Expander box	8089086

V.TAPE (AV1), AV (AV2) & DECODER (AV3)



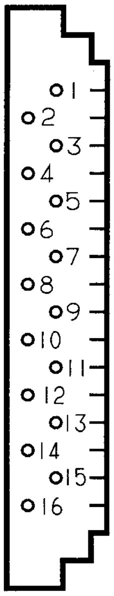
Pin 1	Audio R out 1V RMS 820 ohms
Pin 2	Audio R in 1V RMS 47 kohms
Pin 3	Audio L out 1V RMS 820 ohms
Pin 4	Audio GND
Pin 5	Blue GND
Pin 6	Audio L in 1V RMS 47 kohms
Pin 7*	Blue in 0.7 Vpp 75 ohms (note 1)
Pin 8	Play voltage: Logic 0 = 0V to 2V Logic 1 = 9.5V to 12V (4:3 info) 5V = 16:9 info Data out (AV2 only)
Pin 9	Green GND
Pin 10	Not used
Pin 11*	Green in 0.7 Vpp 75 ohms
Pin 12	Not used
Pin 13	Red GND
Pin 14	Blanking GND
Pin 15*	Red in 0.7 Vpp 75 ohms (note 1)
Pin 16*	Blanking in Logic 0 = 0V to 0.4V Logic 1 = 1V to 3V R in 75 ohms
Pin 17	Video out GND
Pin 18	Video in GND
Pin 19	Composite video out 1 Vpp 75 ohms (note 2)
Pin 20	Composite video in 1 Vpp 75 ohms (note 2)
Pin 21	Shield

* = Not used on AV1.

Note 1: On AV2 pin 15 is also used for C in and pin 7 for C out.

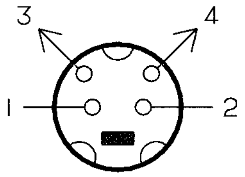
Note 2: On AV2 pin 20 is also used for Y in and pin 19 for Y out.

MASTER LINK



Pin 1	Data- -0.25V ±0.1V
Pin 2	Data+ +0.25V ±0.1V
Pin 3	ML sense
Pin 4-10	N.C.
Pin 11	-supply voltage -7V to -15V (in standby -3V to -15V)
Pin 12	+supply voltage +7V to +15V (in standby +3V to +15V)
Pin 13	Audio -L 1V Bal, Rin 2.2Mohms, Rout 75ohms
Pin 14	Audio +L 1V Bal, Rin 2.2Mohms, Rout 75Mohms
Pin 15	Audio -R 1V Bal, Rin 2.2Mohms, Rout 75ohms
Pin 16	Audio +R 1V Bal, Rin 2.2Mohms, Rout 75ohms

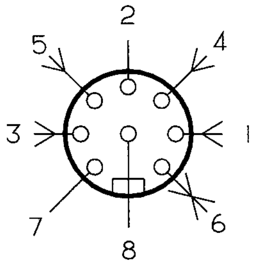
S-VHS



Pin 1	Y GND
Pin 2	C GND
Pin 3	Luminance in (Y) 1 Vpp 75 ohms
Pin 4	Chrominance in (C) 1 Vpp 75 ohms

VIDEO	Composite video in 1Vpp 75 ohms
L & R	Audio L & R in 0.2V - 2 V RMS >10 kohms
PHONES	∅ 3.5 mm 220 ohms

POWER LINK FRONT & REAR



Pin 1	PL ON = >2.5V, OFF = <0.5V
Pin 2	Signal GND
Pin 3	Audio L out 0V - 2V RMS
Pin 4	PL speaker ON = >2.5V, OFF = <0.5V
Pin 5	Audio R out 0V - 2V RMS
Pin 6	Data: High >3.5V, Low <0.8V
Pin 7	Data GND
Pin 8	Not used

Subject to change without notice

***TYPE SURVEY**				**Mounting modules for modification to other TV transmission systems**
Type	**System**		**PAL/SECAM B/G/L/L'/I**	**PAL/SECAM/NTSC B/G/D/K/M/I**
8111	B/G	EU	8008326	8008325
8112	B/G	Italy	8008326	8008325
8115	B/G	AUS	8008326	8008325
8116	B/G/D/K/M/I	TAI	8008326	
8133	I	GB	8008326	8008325
8144	B/G/L/L'	F(EU)	8008326	8008325
8166	B/G/D/K/M/I	East EU	8008326	
8177	B/G/L/L'/I	F(EU)		8008325
8186	B/G/D/K/M/I	HK	8008326	

All TV's mentioned are equiped with PAL/SECAM/NTSC colour decoder.
All TV's mentioned can be equiped with NICAM system B/G/L/I stereo decoder on request.
8008326 Tuner & IF system B/G/L/L'/I PCB.
8008325 Tuner & IF system B/G/D/K/M/I PCB.
If the TV is modified to another TV transmission system, the values in the "TV service setup" menu must be changed (see section 5 REPAIR TIPS).

BRIEF OPERATION GUIDE

Operating the on-screen menus on BeoVision Avant with Beo4.
The menus may differ with built-in kits.

Main/daily operations

TV	Switches on to the TV program you were last watching
SAT	Switches on to the satellite TV program you were last watching
0 through **9**	Press to select a specific program number
▲ or ▼	Press to step through your programs

V.TAPE	Press to start playing the video tape
STOP **STOP**	Pauses the video tape Press again to stop playback
GO	Press any time to start/resume playing the tape
◀◀ or ▶▶	Press to rewind the tape Press to fast forward the tape

∧	Press to raise the volume
∨	Press to lower the volume
●	Press to switch to stand-by

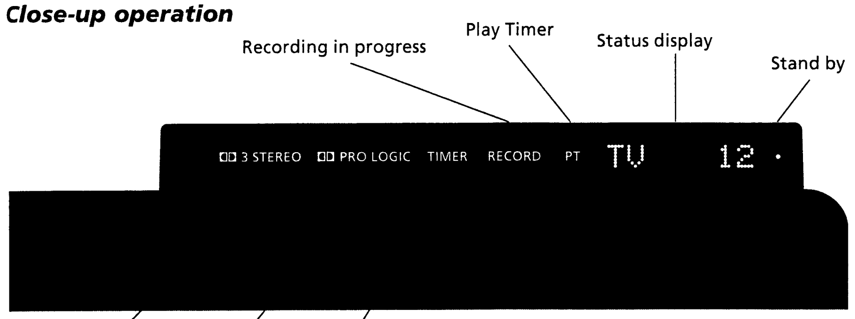
TEXT	Switches to teletext Press >> or << to leaf through the four memory pages; or key in the teletext page number you want
EXIT	Press to return to watching TV

LIST then	Press to display *CLOCK*
GO	Press to see the time on the Avant display Press again to remove the time

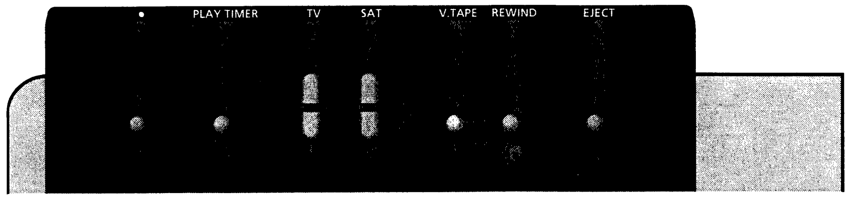
LIST then	Press to display *STAND*
◀◀ or ▶▶	Press to turn the system to the left Press to turn the system to the right
EXIT	Removes *STAND* from the display

LIST then	Press to display *FORMAT*
GO	Adapt the current picture to the BeoVision Avant picture screen Alternatively, press ▲ or ▼ to select the exact format you want
EXIT	Removes *FORMAT* from the display

Close-up operation



BeoVision Avant display bar *- The display bar gives information about the system and conceals the buttons for close-up operation on the back.*



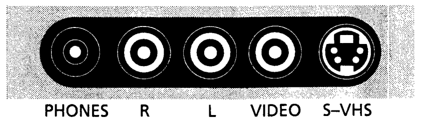
MENU (General options):

MENU then	Calls up the main menu
▼	Press to move the cursor (purple text) to the other items in the menu Make sure that the item/function you want is lit up in purple...
then **GO**	Press to call up the menu for that particular function Alternatively, just key in the number shown against the item you want

STOP	Press any time to return to the previous menu
or **EXIT**	Press to remove the menus from the screen altogether

In fill-in menus:

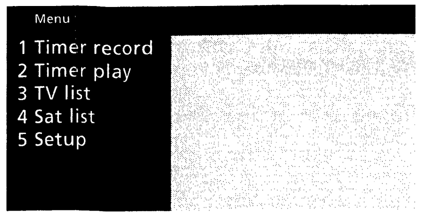
▶▶ or ◀◀	Press to move the cursor (purple text) from item to item in the menu When an item turns purple, it can be changed:
0 through **9**	Press to key in numbers
▼ or ▲	Press to reveal other options When you have filled the required information into the menu,...
GO	...press to accept it



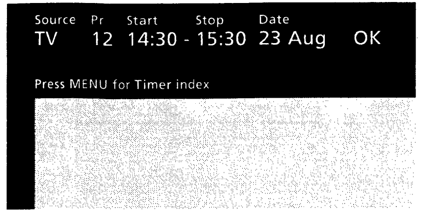
BeoVision Avant easy-access socket panel

Just below the operation panel you will find a small socket panel conveniently placed for connection of headphones and camcorder.

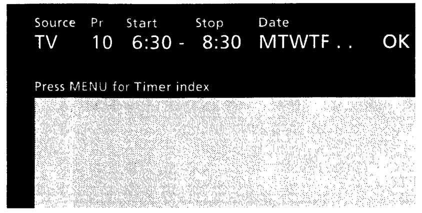
BeoVision Avant operation panel *- The buttons are placed on the rear side of the display bar.*


Menu
1 Timer record
2 Timer play
3 TV list
4 Sat list
5 Setup

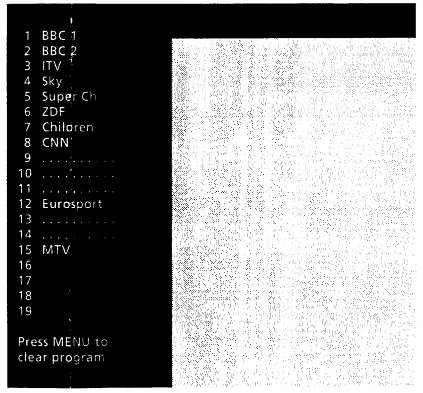
1 Timer record... Calls up the menu you must use to program a timer recording


Source Pr Start Stop Date
TV 12 14:30 - 15:30 23 Aug OK
Press MENU for Timer index

2 Timer play... Calls up the menu you must use to program the timer play/stand-by

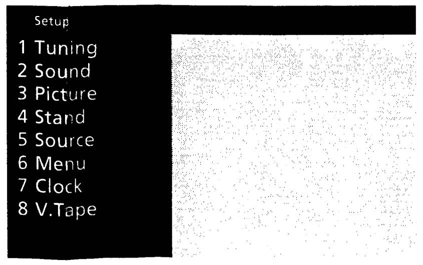

Source Pr Start Stop Date
TV 10 6:30 - 8:30 MTWTF . . OK
Press MENU for Timer index

3 TV list... Calls up the TV program list

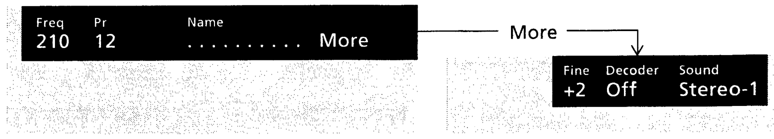

1 BBC 1
2 BBC 2
3 ITV
4 Sky
5 Super Ch
6 ZDF
7 Children
8 CNN
9 . . . .
10 . . . .
11 . . . .
12 Eurosport
13 . . . .
14 . . . .
15 MTV
16
17
18
19
Press MENU to clear program

4 Sat list... Calls up the satellite program list. This item only appears if your BeoVision Avant is equipped for satellite TV reception - if not, *Setup* (see below) will be item number 4.

5 Setup... Calls up the BeoVision Avant Setup menu, which gives access to presetting the system.


Setup
1 Tuning
2 Sound
3 Picture
4 Stand
5 Source
6 Menu
7 Clock
8 V.Tape

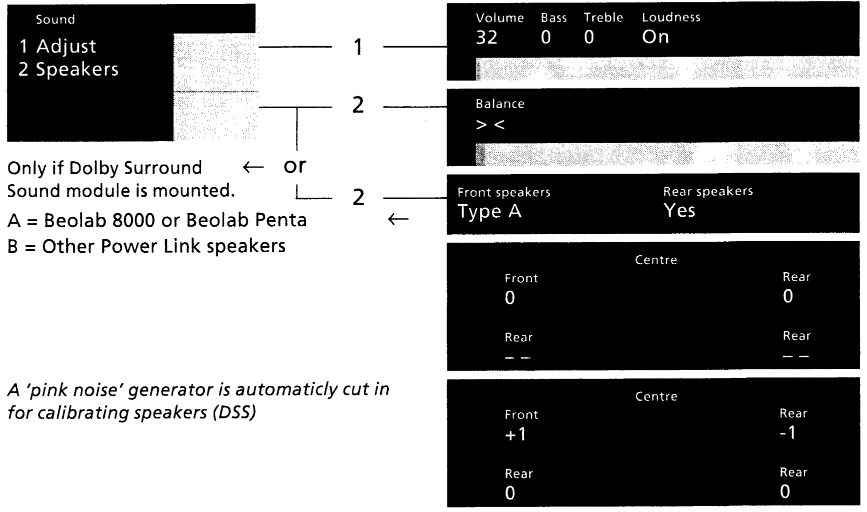
1 Tuning... Gives access to tuning in to TV and satellite TV stations


Freq Pr Name
210 12 . . . . More

More

Fine Decoder Sound
+2 Off Stereo-1

2 Sound... Gives access to adjusting sound



Sound
1 Adjust
2 Speakers

Volume Bass Treble Loudness
32 0 0 On

Balance
> <

Front speakers Type A
Rear speakers Yes

Centre
Front 0
Rear 0
Rear – –
Rear – –

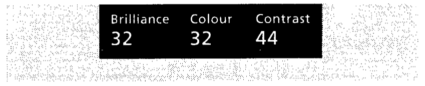
Centre
Front +1
Rear -1
Rear 0
Rear 0

Only if Dolby Surround Sound module is mounted.

A = Beolab 8000 or Beolab Penta
B = Other Power Link speakers

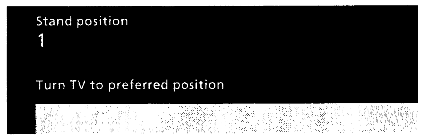
A 'pink noise' generator is automaticly cut in for calibrating speakers (DSS)

3 Picture... Gives access to adjusting the picture


Brilliance Colour Contrast
32 32 44

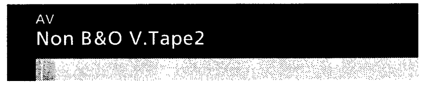
Nominal values

4 Stand... Gives access to presetting your favourite viewing angles for the motorised stand


Stand position
1
Turn TV to preferred position

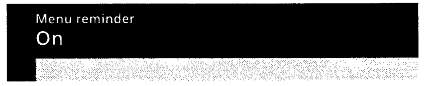
0 = stand-by position
1 = preferred position
2 = other stored position

5 Source... Calls up the AV Source menu in which you must register any extra video equipment


AV
Non B&O V.Tape2

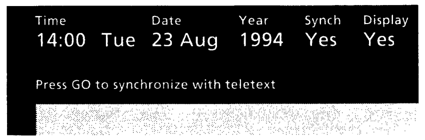
V.Tape 2, S-VHS V.Tape 2, CDV or Decoder - 2

6 Menu... Gives access to switching the menu guidance function on and off


Menu reminder
On

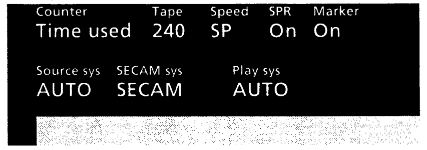
Automatic on-screen menu text guidance

7 Clock... Gives access to setting the built in clock in the BeoVision Avant


Time Date Year Synch Display
14:00 Tue 23 Aug 1994 Yes Yes
Press GO to synchronize with teletext

Synch = teletext time synchronize ?
Display = time displayed ?

8 V.Tape... Calls up the special menus for the video tape recorder in which you must register your preferences


Counter Tape Speed SPR Marker
Time used 240 SP On On
Source sys SECAM sys Play sys
AUTO SECAM AUTO

Refer to VTR Service Manual for further information (B.O.G.)

Beo4
The Beo4 remote control gives you the possibility to set it up to match any Bang & Olufsen system in the best possible way. This is done by means of option programming and the add/remove functions in Beo4. Only the functions (cues) relevant for a given setup should be found visible in the display.

Option programming
Enables you to pre-program a Bang & Olufsen product setup.

		Beo4 display
●	Press and hold	
LIST	Then press shortly	*OPTION?*
GO	Calls up the list of cues	*V.OPT*
LIST	Select option type (toggle)	*A.OPT, L.OPT* or *V.OPT*
1 ↓ 6	Key in the option number	
EXIT	To leave option setup	

The BeoVision Avant can be programmed for the following setup situations:

Option 0.
Used if you want to disable remote control operation of the BeoVision Avant.

Option 1 (factory setting).
Used in a *one-room* setup either with the BeoVision Avant on its own, or in an AV integrated setup with a pair of speakers connected to the audio system.

Option 2.
Used in a *two-room* setup, or in a *one-room* setup with no speakers connected to the audio system (fully integrated AV system).

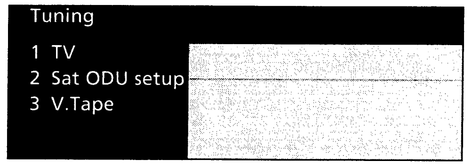
NOTE:
Please refer to the special User's Guide or Setting-up Guide for further information.

Customizing the Beo4
Enables you to pre-program the Beo4 to match any Bang & Olufsen system. Remove not relevant functions (cues), and add functions you want to appear when pressing LIST in daily use.

		Beo4 display
●	Press and hold	
LIST	Then press shortly	*OPTION?*
LIST	Select function (toggle)	*ADD* or *REMOVE* (or *OPTION?*)
GO	Calls up the list of cues	*REPEAT* or *FORMAT*
LIST	Toggle through cues	Default *ADD* cues (blinks): *REPEAT, EDIT, PAGE, MONO, RESET, TURN, RETURN, PICTURE, SOUND, BASS, TREBLE, LOUDNSS, S.STORE, SHIFT, PHONO, A.TAPE2, CDV, CD2, P-IN-P, LINK, LINK-AV, A.AUX, V.AUX, PHONE* Default *REMOVE* cues: *FORMAT, STAND, SELECT, RANDOM, TRACK, SPEAKER, CLOCK, LARGE, REVEAL, INDEX, UPDATE, MIX, SUBCODE, COUNTER, TRACKNG, LAMP, STORE, RECORD2, V.TAPE2*
GO	Press to add/remove cue	Removed cues blinks (off = *ADD* cue)
LIST	Press for next cue	
EXIT	To leave add/remove setup	

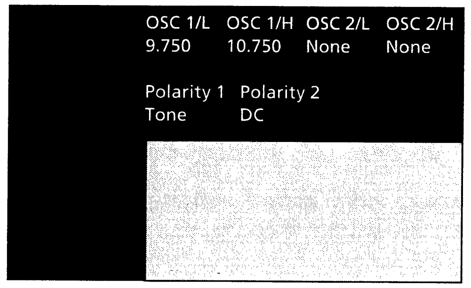
Satellite ODU-set-up

TV	TV on
MENU	Main menu
5	Set-up menu
1	Tuning menu
▼	Choose Sat in the menu
MENU	Select the special programming menu for the Out Door Unit


Tuning
1 TV
2 Sat ODU setup
3 V.Tape

GO **ODU set-up**
The satellite receiver has two inputs (1 and 2), which permits two ODU's to be connected, even if they operate within the same frequency band.

Fill in the menu with ▲ ▼, ▶▶ ◀◀ and perhaps 0 - 9.
Store changes in the menu by pressing GO or by going out of the menu by pressing EXIT


OSC 1/L OSC 1/H OSC 2/L OSC 2/H
9.750 10.750 None None

Polarity 1 Polarity 2
Tone DC

Surfaces
Wipe dust off the surfaces of your BeoVision Avant using a dry, soft cloth.

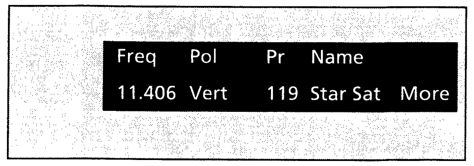
If necessary, remove grease stains or more persistent dirt with a firmly wrung lint-free cloth which you have dipped in a solution of water containing a few drops of a mild detergent.

To clean the picture screen use a mild window cleaning fluid. Make sure no streaks or traces of the cleaning fluid are left on the screen.

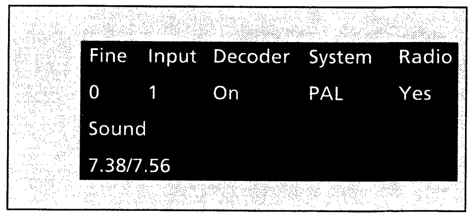
Tuning to satellite stations

TV	TV on
MENU	Main menu
5	Set-up menu
1	Tuning menu
2	Sat tuning menu*

When the ODU setup menu has been filled in it is possible to store the programmes in the Sat-tuning menu.
Fill in the menu with ▼ ▲, ▶▶ ◀◀ and perhaps 0 - 9
See the BeoVision Avant setting-up guide for further information.


Freq Pol Pr Name
11.406 Vert 119 Star Sat More

Select More and press GO


Fine Input Decoder System Radio
0 1 On PAL Yes
Sound
7.38/7.56

The submenu under Sat-tuning contains the more specialized programming options.
Fill in the menu with ▼ ▲, ▶▶ ◀◀

Store changes in the Sat-tuning menu by pressing GO, and abandon the menu by pressing EXIT

*Note
BeoVision Avant's satellite receiver is preprogrammed from the factory with all the stations currently being transmitted by the Astra satellites.

EXPLANATION OF DIAGRAM

Type numbers of transistors and ICs are indicated on the diagrams. If the position number is followed by an asterisk the spare part number must always be used because the component in question has been specially selected, e.g. TR102*.

Component print and coordinate system

The largest PCBs have component prints and a coordinate system on both the print and the component side.
On the diagrams every component has a coordinate number. This indicates in which coordinate on the PCB the component is situated. The coordinate numbers are written in smaller print types than the position numbers.

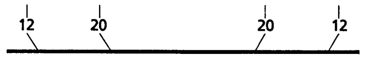
Control circuit

In certain control circuits the active mode is indicated by a function term or by an abbreviation. This may be e.g. $\overline{\text{ST.BY.}}$ = low in the stand-by mode or ST.BY. = high in the stand-by mode.

Wiring connections

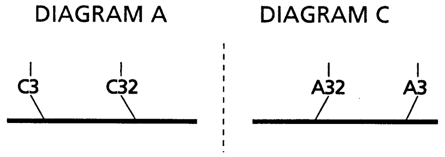
The wiring connections on the diagrams are assembled in 'bundles'.
The individual wires are provided with one of the following codes:

INTERNAL CONNECTION ON ONE DIAGRAM PAGE



CONNECTION TO ANOTHER DIAGRAM PAGE

Internal connections on a diagram page are indicated by a number.
The bend of the wire indicates in wich direction the other end of the wire is found.



A connection to another diagram page is indicated by a number as well as by letter of the diagram to which the connection leads.

Ground symbols

Two different ground symbols are used in the diagrams:.

⏚ = Ground that is not galvanically separated from the mains. (Used in diagram M, PCB4).

⊥ = Ground

Signal paths and IC markings

The signal paths are shown in the diagrams by means of semibold lines and arrow heads.
As shown, two different types of arrow head are used:

—>— = Video, luminance and chrominance signals

—>>— = Sound signal

The arrow heads shown in the IC pins tell wether the pins tell whether the pin indicated is an input or an output.

Measuring conditions

Measure all DC voltages in relation to ground and with voltmeter or oscilloscope with inner resistance of at least 2Mohm.

Measure DC voltages and oscilloscope pictures in TV mode at an UHF aerial (colour bar) of approx. 1.5mV. Brilliance step 32, contrast step 44 and colour saturation step 32.

Oscilloscope pictures on the signal path in connection with the AV2 socket on diagram H and I are measured with Y/C signal on AV2.

Symbol of safety components

⚠

When replacing components with this symbol, the same type has to be used, also the same values for ohm and watt.
The new component is to be mounted in the same way as the replaced one.

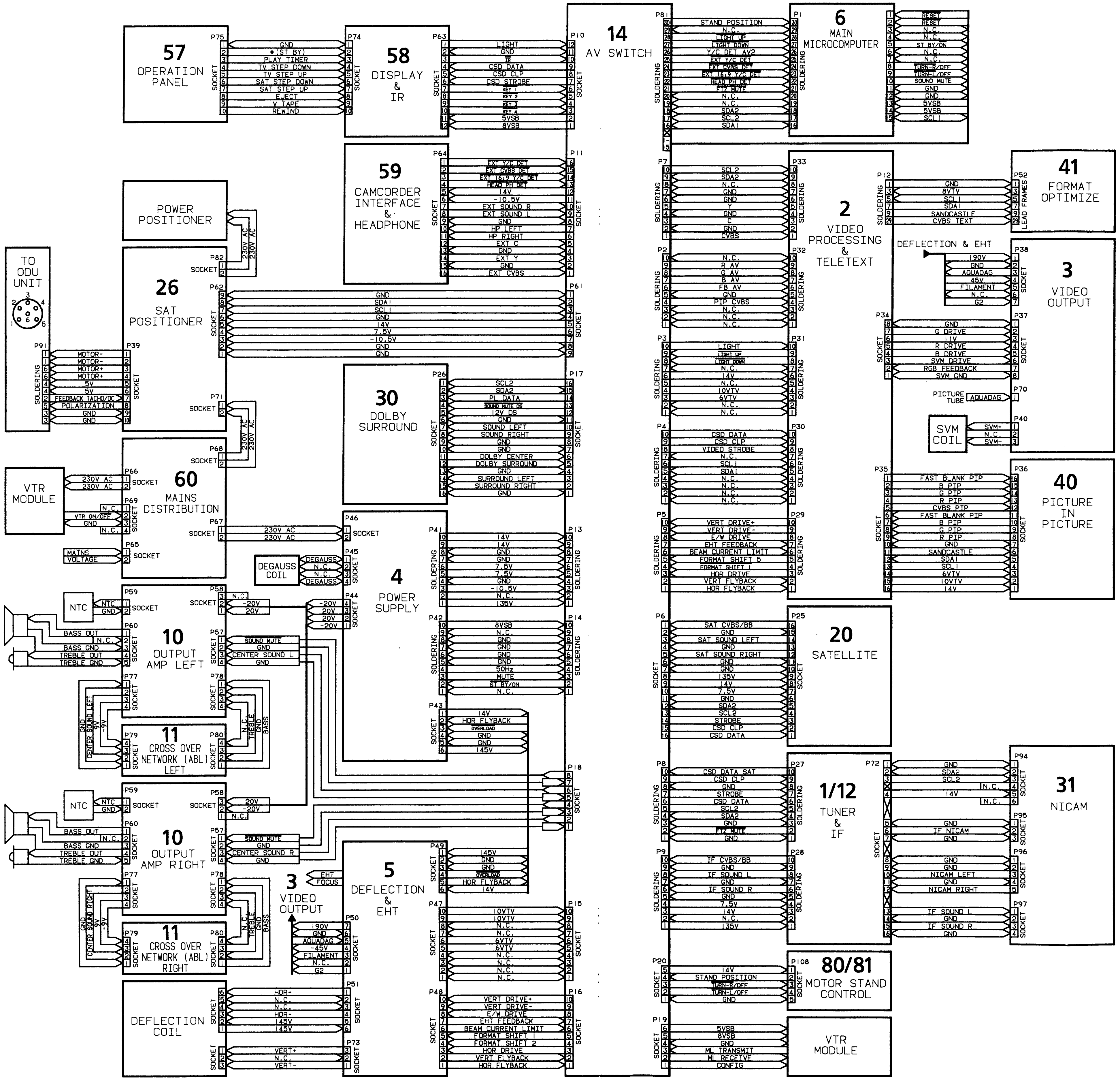
Lithium battery

ADVARSEL
LITHIUMBATTERI - EKSPLOSIONSFARE
UDSKIFTNING MÅ KUN FORETAGES AF EN SAGKYNDIG
OG SOM BESKREVET I SERVICE MANUAL

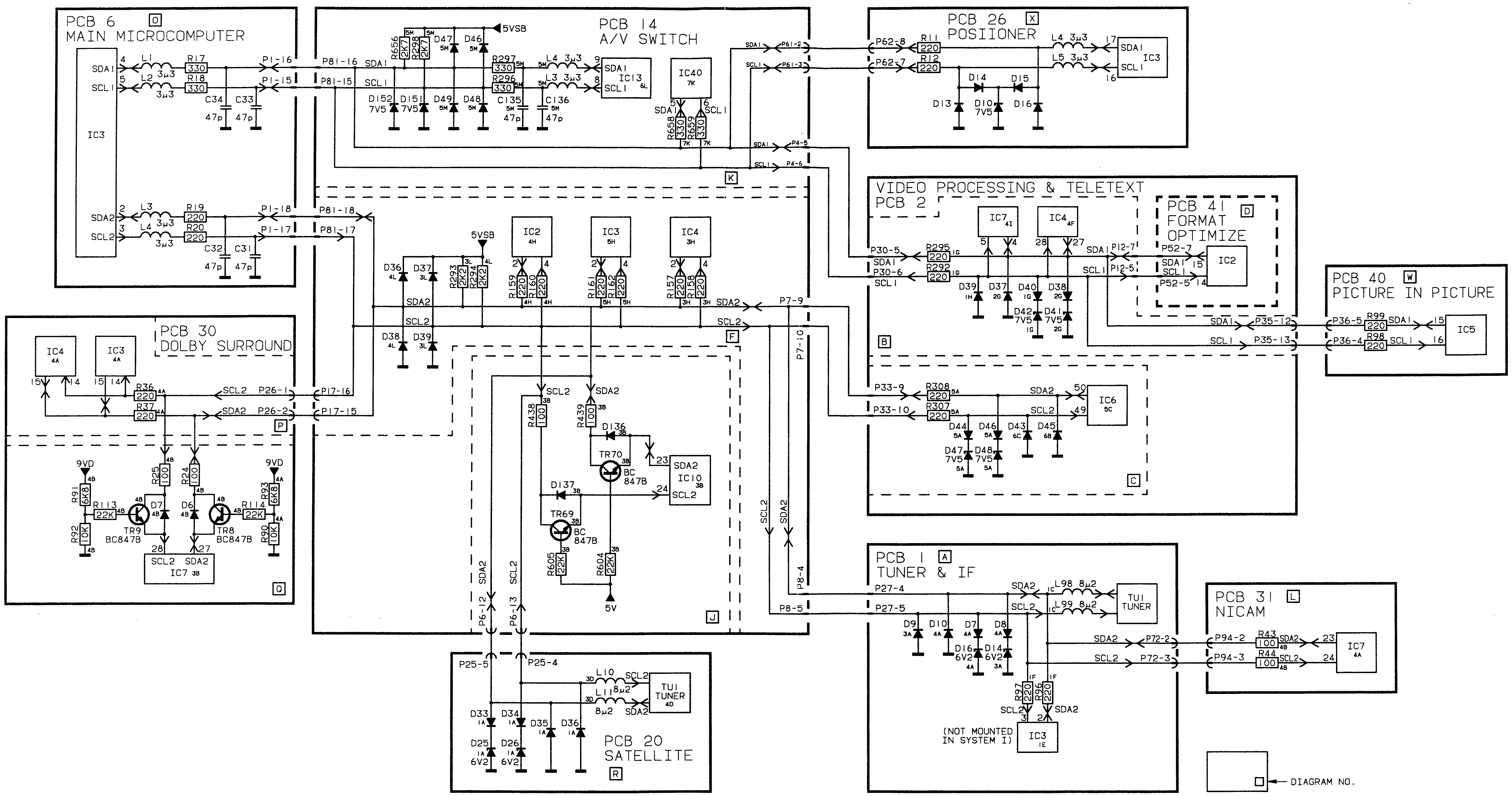
WARNING
LITHIUM BATTERY - RISK OF EXPLOSION
TO BE REPLACED BY QUALIFIED SERVICEMAN ONLY
AND AS DESCRIBED IN THE MANUAL

WARNING
Short-circuit and overcharging of some types of lithium batteries may result in a violent explosion.
When replacing the lithium battery in this set, note the following:
Use **only** batteries at the same make and type as mentioned in this service manual (see page 3-15).
Place the battery exactly like the old one.

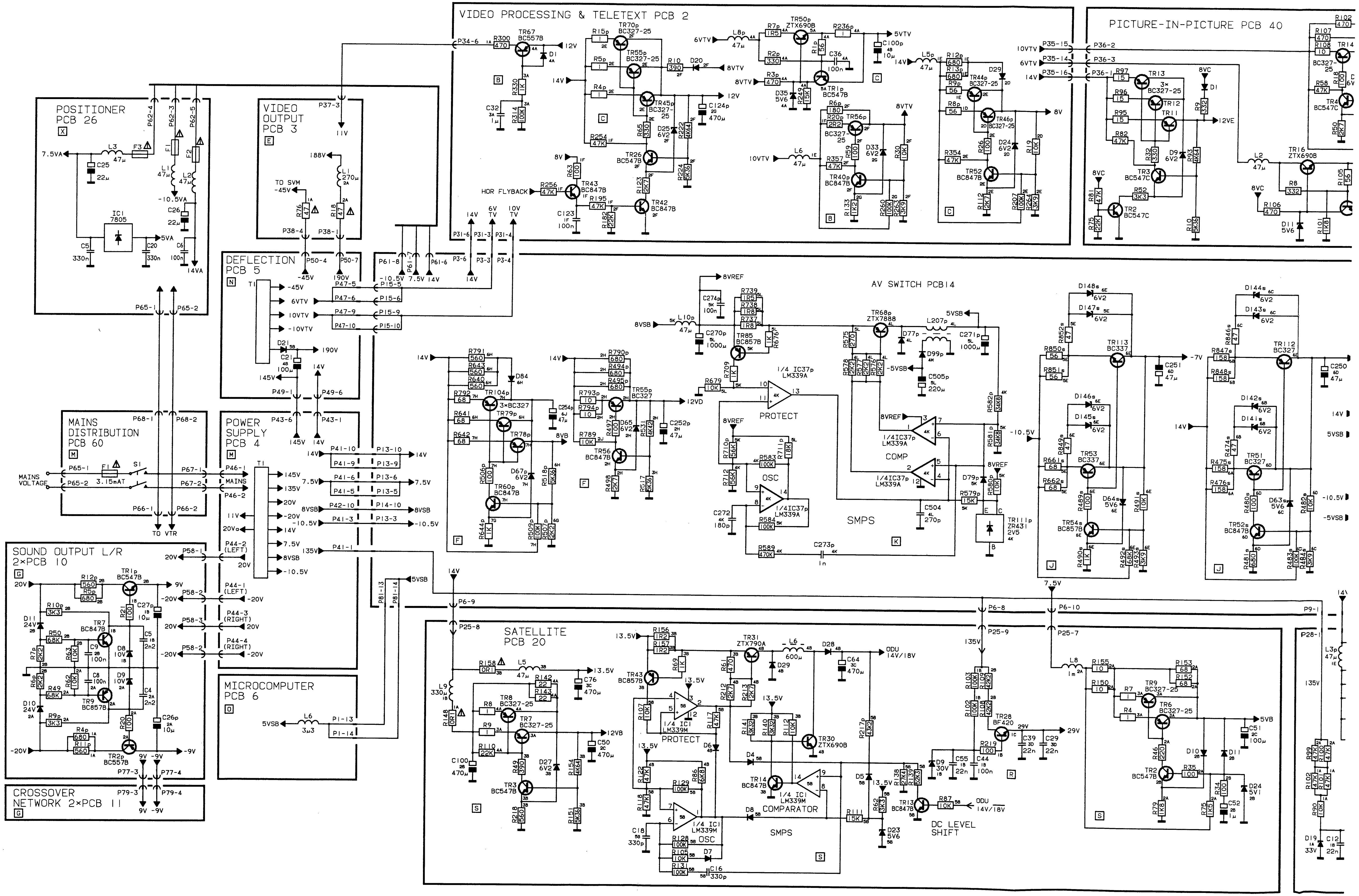
WIRING DIAGRAM

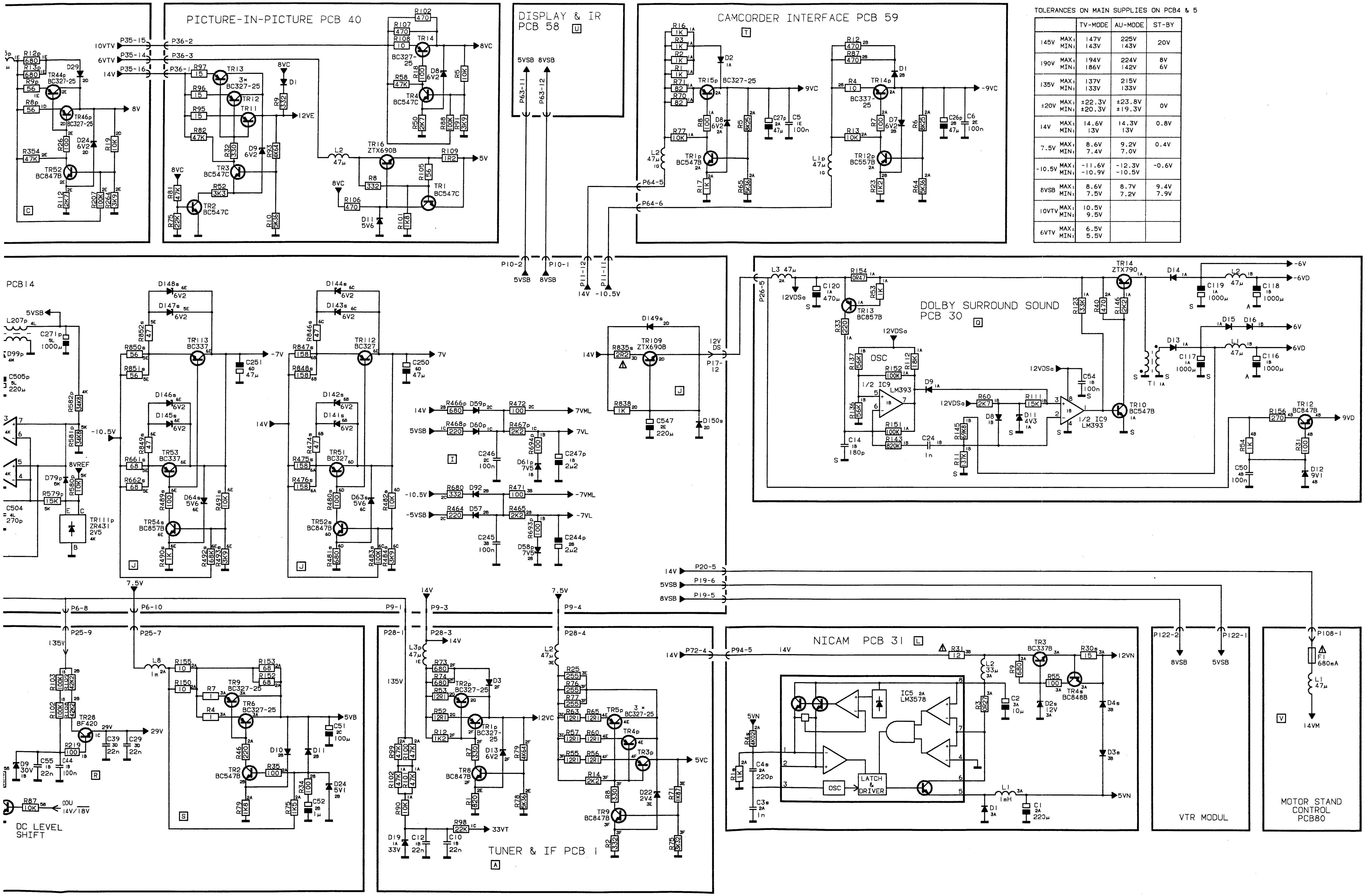

57 OPERATION PANEL
58 DISPLAY & IR
14 AV SWITCH
6 MAIN MICROCOMPUTER
59 CAMCORDER INTERFACE & HEADPHONE
POWER POSITIONER
TO ODU UNIT
26 SAT POSITIONER
30 DOLBY SURROUND
2 VIDEO PROCESSING & TELETEXT
41 FORMAT OPTIMIZE
DEFLECTION & EHT
3 VIDEO OUTPUT
SVM COIL
PICTURE TUBE
40 PICTURE IN PICTURE
VTR MODULE
60 MAINS DISTRIBUTION
MAINS VOLTAGE
DEGAUSS COIL
4 POWER SUPPLY
NTC
10 OUTPUT AMP LEFT
11 CROSS OVER NETWORK (ABL) LEFT
10 OUTPUT AMP RIGHT
11 CROSS OVER NETWORK (ABL) RIGHT
3 VIDEO OUTPUT
5 DEFLECTION & EHT
DEFLECTION COIL
20 SATELLITE
1/12 TUNER & IF
31 NICAM
80/81 MOTOR STAND CONTROL
VTR MODULE

BLOCK DIAGRAM I²C BUS


PCB 6 O
MAIN MICROCOMPUTER
IC3
SDA1
SCL1
SDA2
SCL2
L1 3μ3
L2 3μ3
L3 3μ3
L4 3μ3
R17 330
R18 330
R19 220
R20 220
C34 47p
C33 47p
C32 47p
C31 47p
P1-16
P1-15
P1-18
P1-17
PCB 14
A/V SWITCH
5VSB
R656 2K7
R298 2K7
D47
D46
R297 330
R296 330
L4 3μ3
L3 3μ3
IC13 6L
D152 7V5
D151 7V5
D49
D48
C135 47p
C136 47p
IC40 7K
R658 330
R659 330
P81-16
P81-15
P81-18
P81-17
P61-2
P61-3
P4-5
P4-6
K
IC2 4H
IC3 5H
IC4 3H
D36
D37
D38
D39
R293 2K2
R294 2K2
R159 220
R160 220
R161 220
R162 220
R157 220
R158 220
P7-9
P7-10
F
J
R438 100
R439 100
D136
TR70 BC 847B
D137
TR69 BC 847B
IC10 3B
R605 22K
R604 22K
5V
P6-12
P6-13
P8-4
P8-5
PCB 30
DOLBY SURROUND
IC4 4A
IC3 4A
R36 220
R37 220
P26-1
P26-2
P17-16
P17-15
P
9VD
R91 6K8
R92 10K
R113 22K
TR9 BC847B
D7
D6
R25 100
R24 100
TR8 BC847B
R114 22K
R93 6K8
R90 10K
IC7 3B
Q
PCB 20
SATELLITE
R
P25-5
P25-4
L10
L11 8μ2
TU1 TUNER 4D
D33
D34
D35
D36
D25 6V2
D26 6V2
PCB 26 X
POSIIONER
P62-8
P62-7
R11 220
R12 220
L4 3μ3
L5 3μ3
IC3
D14
D15
D13
D10 7V5
D16
VIDEO PROCESSING & TELETEXT
PCB 2
IC7 4I
IC4 4F
P30-5
P30-6
R295 220
R292 220
D39
D37
D40
D38
D42 7V5
D41 7V5
P12-7
P12-5
B
PCB 41 D
FORMAT OPTIMIZE
IC2
P52-7
P52-5
P33-9
P33-10
R308 220
R307 220
IC6 5C
D44
D46
D43
D45
D47 7V5
D48 7V5
C
PCB 40 W
PICTURE IN PICTURE
P35-12
P35-13
P36-5
P36-4
R99 220
R98 220
IC5
PCB 1 A
TUNER & IF
P27-4
P27-5
L98 8μ2
L99 8μ2
TU1 TUNER
D9
D10
D7
D8
D16 6V2
D14 6V2
P72-2
P72-3
R97 220
R96 220
(NOT MOUNTED IN SYSTEM I)
IC3 1E
PCB 31 L
NICAM
P94-2
P94-3
R43 100
R44 100
IC7 4A
DIAGRAM NO.

BLOCK DIAGRAM FOR POWER SUPPLIES

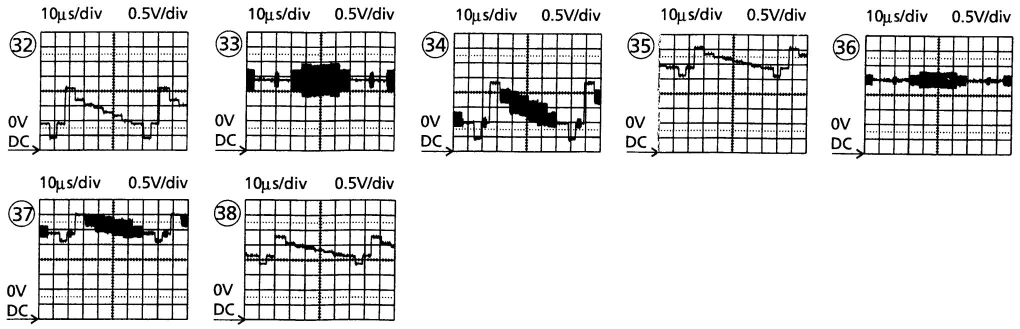

VIDEO PROCESSING & TELETEXT PCB 2
PICTURE-IN-PICTURE PCB 40
POSITIONER PCB 26
VIDEO OUTPUT PCB 3
DEFLECTION PCB 5
MAINS DISTRIBUTION PCB 60
POWER SUPPLY PCB 4
SOUND OUTPUT L/R 2×PCB 10
CROSSOVER NETWORK 2×PCB 11
MICROCOMPUTER PCB 6
AV SWITCH PCB14
SATELLITE PCB 20
MAINS VOLTAGE
TO VTR
PROTECT
OSC
COMP
SMPS
COMPARATOR
DC LEVEL SHIFT
IC1 7805
LM339A
LM339M
TR50p ZTX690B
TR68p ZTX7888
TR31 ZTX790A
TR30 ZTX690B
TR16 ZTX690B
TR111p ZR431 2V5
5VTV
6VTV
8VTV
10VTV
14V
12V
8V
12VE
7.5VA
5VA
14VA
-10.5VA
145V
135V
20V
-20V
11V
7.5V
8VSB
-10.5V
190V
-45V
-7V
5VSB
8VREF
12VD
13.5V
12VB
29V
5VB
ODU 14V/18V
9V
-9V


PICTURE-IN-PICTURE PCB 40
DISPLAY & IR PCB 58
CAMCORDER INTERFACE PCB 59
PCB14
DOLBY SURROUND SOUND PCB 30
NICAM PCB 31
TUNER & IF PCB 1
VTR MODUL
MOTOR STAND CONTROL PCB80
DC LEVEL SHIFT
IC5 LM3578
OSC
LATCH & DRIVER
1/2 IC9 LM393
10VTV
6VTV
14V
8V
8VC
12VE
5V
5VSB
8VSB
9VC
-9VC
-7V
7V
7VML
7VL
-7VML
-7VL
-10.5V
12V DS
-6V
-6VD
6V
6VD
9VD
29V
5VB
12VC
5VC
33VT
12VN
5VN
14VM
135V
7.5V
F1 680mA

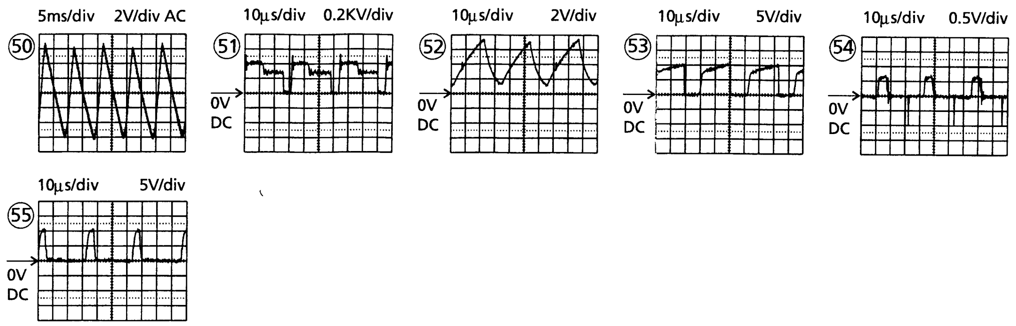
TOLERANCES ON MAIN SUPPLIES ON PCB4 & 5

		TV-MODE	AU-MODE	ST-BY
145V	MAX:	147V	225V	20V
	MIN:	143V	143V	
190V	MAX:	194V	224V	8V
	MIN:	186V	142V	6V
135V	MAX:	137V	215V	
	MIN:	133V	133V	
±20V	MAX:	±22.3V	±23.8V	0V
	MIN:	±20.3V	±19.3V	
14V	MAX:	14.6V	14.3V	0.8V
	MIN:	13V	13V	
7.5V	MAX:	8.6V	9.2V	0.4V
	MIN:	7.4V	7.0V	
-10.5V	MAX:	-11.6V	-12.3V	-0.6V
	MIN:	-10.9V	-10.5V	
8VSB	MAX:	8.6V	8.7V	9.4V
	MIN:	7.5V	7.2V	7.9V
10VTV	MAX:	10.5V		
	MIN:	9.5V		
6VTV	MAX:	6.5V		
	MIN:	5.5V		

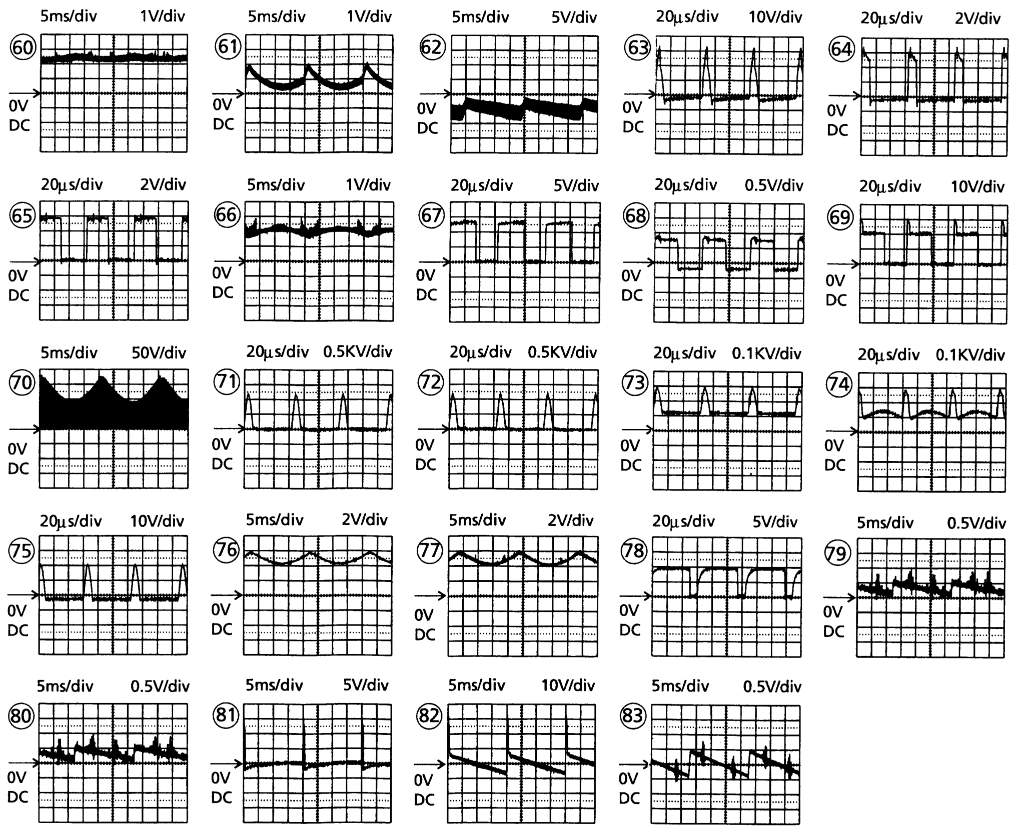
Oscilloscope pictures for diagram F



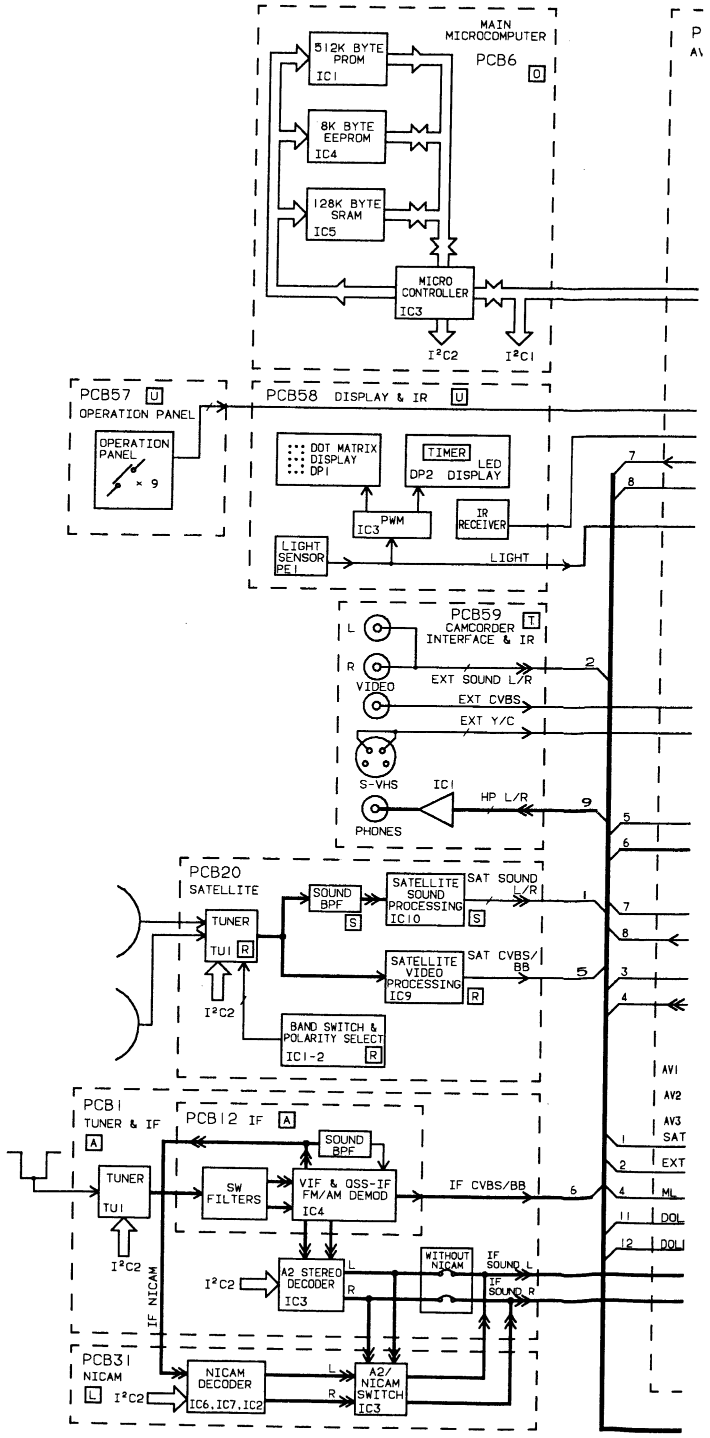
Oscilloscope pictures for diagram M



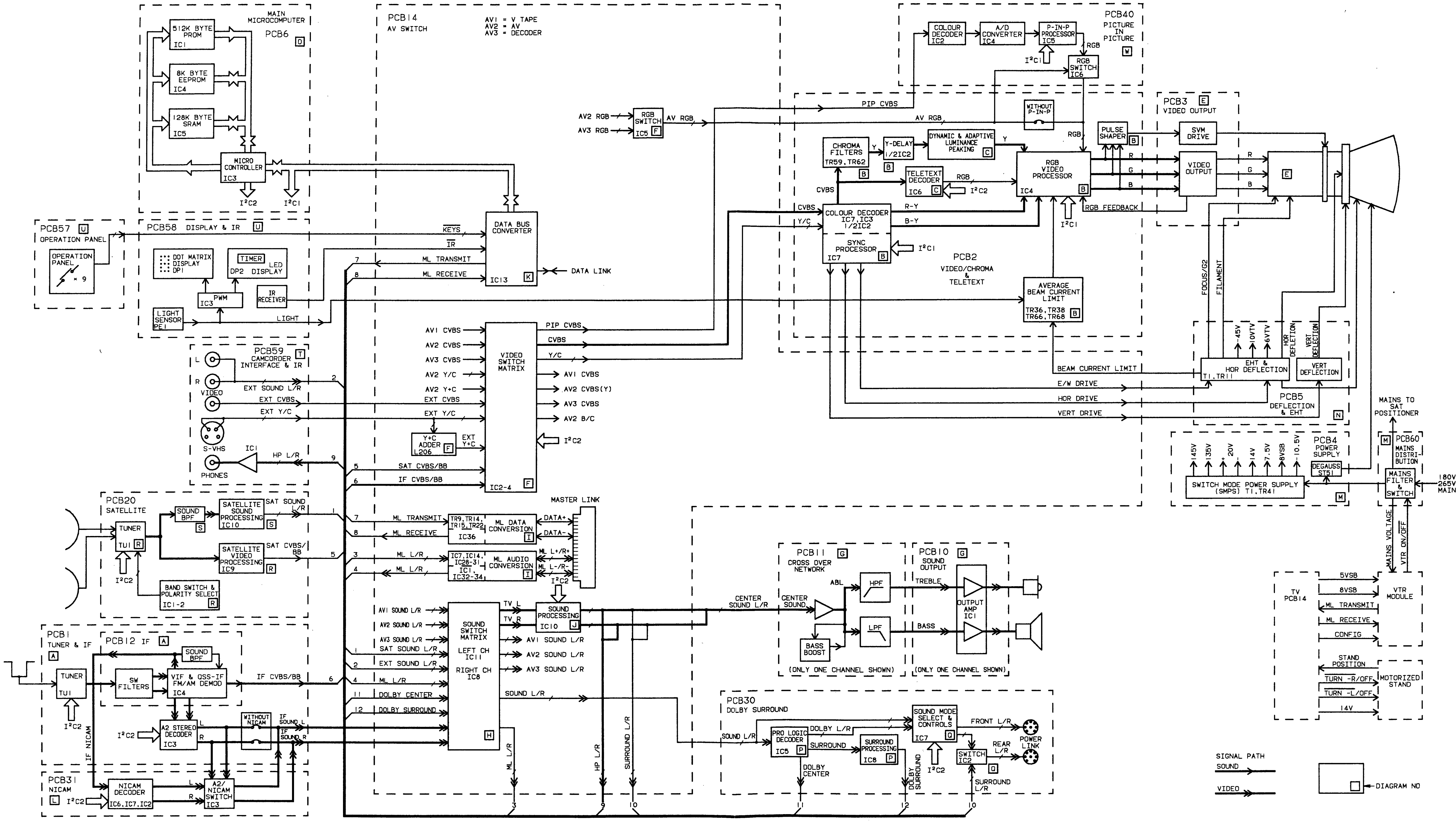
Oscilloscope pictures for diagram N



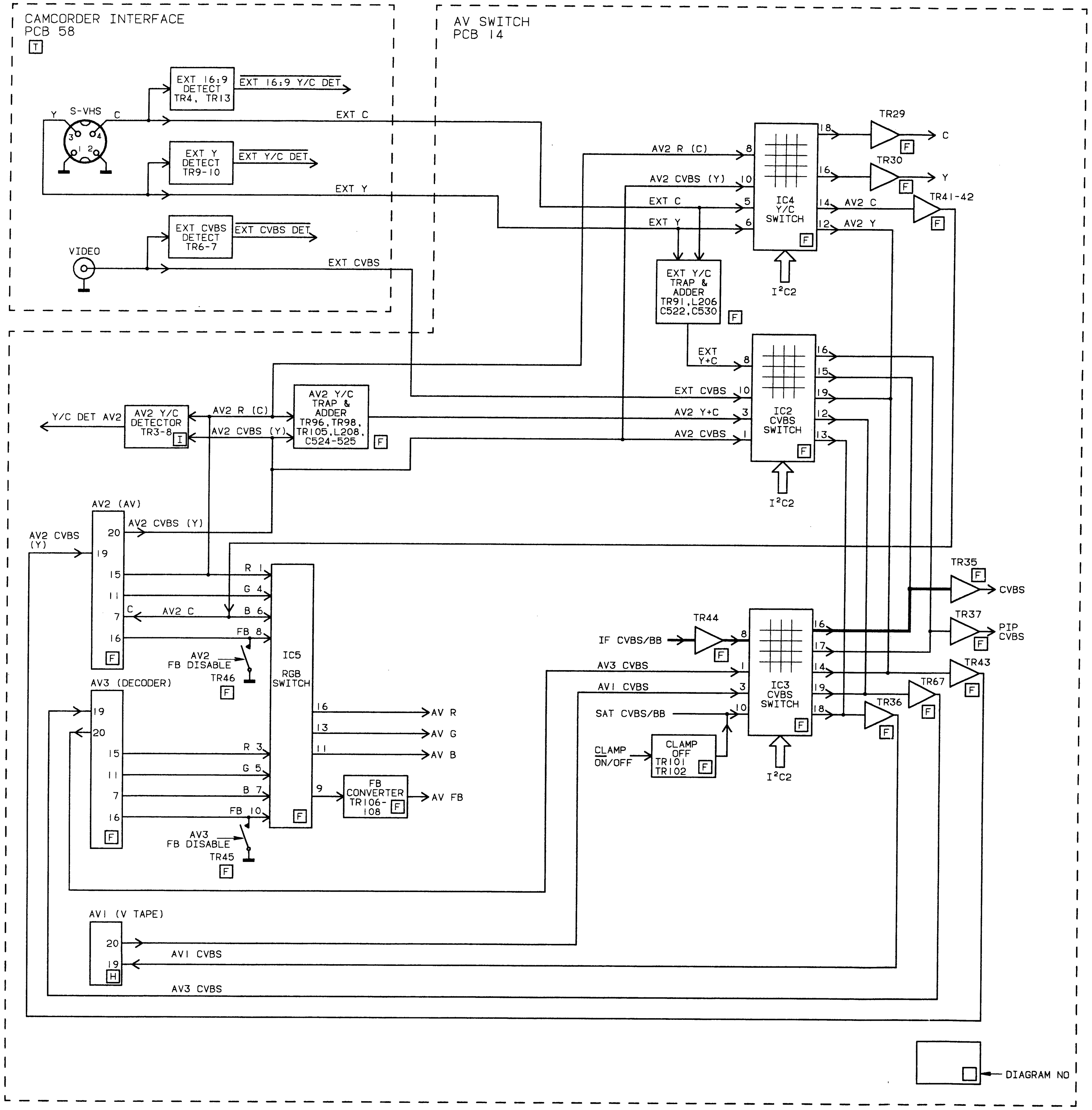
OVERALL BLOCK DIAGRAM


MAIN MICROCOMPUTER
PCB6
O
512K BYTE PROM
IC1
8K BYTE EEPROM
IC4
128K BYTE SRAM
IC5
MICRO CONTROLLER
IC3
I²C2
I²C1
PCB57
U
OPERATION PANEL
OPERATION PANEL
× 9
PCB58 DISPLAY & IR
U
DOT MATRIX DISPLAY
DP1
TIMER
LED DISPLAY
DP2
PWM
IC3
IR RECEIVER
LIGHT SENSOR
PE1
LIGHT
PCB59
T
CAMCORDER INTERFACE & IR
L
R
VIDEO
EXT SOUND L/R
EXT CVBS
EXT Y/C
S-VHS
IC1
HP L/R
PHONES
PCB20
SATELLITE
TUNER
TU1
R
SOUND BPF
S
SATELLITE SOUND PROCESSING
IC10
S
SAT SOUND L/R
SATELLITE VIDEO PROCESSING
IC9
R
SAT CVBS/BB
BAND SWITCH & POLARITY SELECT
IC1-2
R
I²C2
PCB1
TUNER & IF
A
TUNER
TU1
I²C2
PCB12 IF
A
SOUND BPF
SW FILTERS
VIF & QSS-IF FM/AM DEMOD
IC4
IF CVBS/BB
IF NICAM
A2 STEREO DECODER
IC3
I²C2
L
R
WITHOUT NICAM
IF SOUND L
IF SOUND R
PCB31
NICAM
L
I²C2
NICAM DECODER
IC6, IC7, IC2
A2/ NICAM SWITCH
IC3
1
2
3
4
5
6
7
8
9
11
12
AV1
AV2
AV3
SAT
EXT
ML
DOL
DOL
P
A

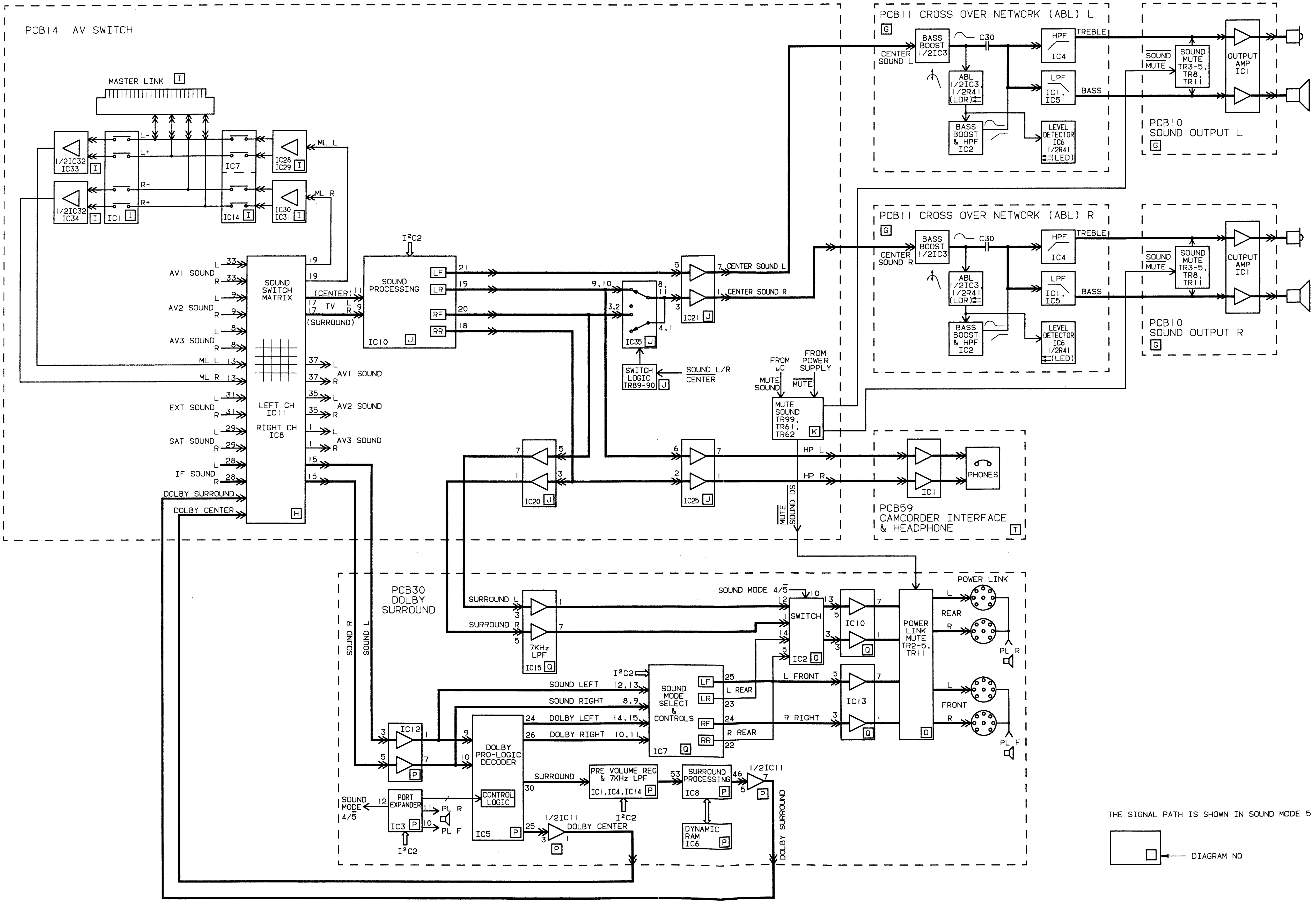
OVERALL BLOCK DIAGRAM


MAIN MICROCOMPUTER
PCB6
D
512K BYTE PROM IC1
8K BYTE EEPROM IC4
128K BYTE SRAM IC5
MICRO CONTROLLER IC3
I²C2
I²C1
PCB14
AV SWITCH
AV1 = V TAPE
AV2 = AV
AV3 = DECODER
PCB57 U
OPERATION PANEL
OPERATION PANEL
× 9
PCB58 DISPLAY & IR U
DOT MATRIX DISPLAY DP1
TIMER LED DP2 DISPLAY
PWM IC3
IR RECEIVER
LIGHT SENSOR PE1
LIGHT
KEYS
IR
ML TRANSMIT
ML RECEIVE
DATA BUS CONVERTER IC13 K
DATA LINK
AV2 RGB
AV3 RGB
RGB SWITCH IC5 F
AV RGB
PCB40
PICTURE IN PICTURE
W
COLOUR DECODER IC2
A/D CONVERTER IC4
P-IN-P PROCESSOR IC5
RGB
RGB SWITCH IC6
I²C1
PIP CVBS
AV RGB
WITHOUT P-IN-P
CHROMA FILTERS TR59, TR62 B
Y
Y-DELAY 1/2IC2 B
DYNAMIC & ADAPTIVE LUMINANCE PEAKING C
TELETEXT DECODER IC6 C
RGB
I²C2
RGB VIDEO PROCESSOR IC4 B
CVBS
COLOUR DECODER IC7, IC3 1/2IC2
SYNC PROCESSOR IC7 B
R-Y
B-Y
Y/C
I²C1
RGB FEEDBACK
PCB2
VIDEO/CHROMA & TELETEXT
AVERAGE BEAM CURRENT LIMIT TR36, TR38 TR66, TR68 B
PCB3 E
VIDEO OUTPUT
PULSE SHAPER B
SVM DRIVE
VIDEO OUTPUT
R
G
B
E
FOCUS/G2
FILAMENT
-45V
10VTV
6VTV
HOR DEFLECTION
VERT DEFLECTION
EHT & HOR DEFLECTION T1, TR11
VERT DEFLECTION
PCB5
DEFLECTION & EHT
N
BEAM CURRENT LIMIT
E/W DRIVE
HOR DRIVE
VERT DRIVE
MAINS TO SAT POSITIONER
PCB4
POWER SUPPLY
145V
135V
20V
14V
7.5V
8VSB
-10.5V
DEGAUSS ST51
SWITCH MODE POWER SUPPLY (SMPS) T1, TR41
M
PCB60
MAINS DISTRIBUTION
MAINS FILTER & SWITCH
180V-265V MAINS
MAINS VOLTAGE
VTR ON/OFF
PCB59
CAMCORDER INTERFACE & IR
T
L
R
VIDEO
S-VHS
PHONES
IC1
EXT SOUND L/R
EXT CVBS
EXT Y/C
HP L/R
AV1 CVBS
AV2 CVBS
AV3 CVBS
AV2 Y/C
AV2 Y+C
EXT CVBS
EXT Y/C
Y+C ADDER L206 F
EXT Y+C
SAT CVBS/BB
IF CVBS/BB
VIDEO SWITCH MATRIX IC2-4 F
PIP CVBS
CVBS
Y/C
AV1 CVBS
AV2 CVBS(Y)
AV3 CVBS
AV2 B/C
I²C2
PCB20
SATELLITE
TUNER TU1 R
SOUND BPF S
SATELLITE SOUND PROCESSING IC10 S
SAT SOUND L/R
SATELLITE VIDEO PROCESSING IC9 R
SAT CVBS/BB
I²C2
BAND SWITCH & POLARITY SELECT IC1-2 R
MASTER LINK
ML TRANSMIT
ML RECEIVE
TR9, TR14, TR15, TR22 IC36
ML DATA CONVERSION I
DATA+
DATA-
ML L/R
ML L/R
IC7, IC14, IC28-31 IC1, IC32-34
ML AUDIO CONVERSION I
ML L+/R+
ML L-/R-
I²C2
PCB1
TUNER & IF
A
TUNER TU1
I²C2
PCB12 IF A
SW FILTERS
SOUND BPF
VIF & QSS-IF FM/AM DEMOD IC4
IF CVBS/BB
I²C2
A2 STEREO DECODER IC3
L
R
WITHOUT NICAM
IF SOUND L
IF SOUND R
IF NICAM
PCB31
NICAM
L
I²C2
NICAM DECODER IC6, IC7, IC2
A2/ NICAM SWITCH IC3
AV1 SOUND L/R
AV2 SOUND L/R
AV3 SOUND L/R
SAT SOUND L/R
EXT SOUND L/R
ML L/R
DOLBY CENTER
DOLBY SURROUND
SOUND SWITCH MATRIX
LEFT CH IC11
RIGHT CH IC8
H
TV L
TV R
SOUND PROCESSING IC10 J
AV1 SOUND L/R
AV2 SOUND L/R
AV3 SOUND L/R
SOUND L/R
ML L/R
HP L/R
SURROUND L/R
CENTER SOUND L/R
PCB11 G
CROSS OVER NETWORK
CENTER SOUND
ABL
HPF
LPF
BASS BOOST
(ONLY ONE CHANNEL SHOWN)
PCB10 G
SOUND OUTPUT
TREBLE
BASS
OUTPUT AMP IC1
(ONLY ONE CHANNEL SHOWN)
PCB30
DOLBY SURROUND
SOUND L/R
PRO LOGIC DECODER IC5 P
DOLBY L/R
SURROUND
SURROUND PROCESSING IC8 P
DOLBY CENTER
DOLBY SURROUND
SOUND MODE SELECT & CONTROLS IC7 Q
I²C2
FRONT L/R
REAR L/R
POWER LINK
SWITCH IC2 Q
SURROUND L/R
TV PCB14
5VSB
8VSB
ML TRANSMIT
ML RECEIVE
CONFIG
VTR MODULE
STAND POSITION
TURN -R/OFF
TURN -L/OFF
14V
MOTORIZED STAND
SIGNAL PATH
SOUND
VIDEO
DIAGRAM NO
1
2
3
4
5
6
7
8
9
10
11
12

BLOCK DIAGRAM VIDEO SWITCHING


CAMCORDER INTERFACE
PCB 58
T
S-VHS
Y
C
EXT 16:9 DETECT TR4, TR13
EXT 16:9 Y/C DET
EXT C
EXT Y DETECT TR9-10
EXT Y/C DET
EXT Y
EXT CVBS DETECT TR6-7
EXT CVBS DET
VIDEO
EXT CVBS
AV SWITCH
PCB 14
AV2 R (C)
AV2 CVBS (Y)
EXT C
EXT Y
IC4 Y/C SWITCH
I²C2
TR29
C
TR30
Y
AV2 C
AV2 Y
TR41-42
EXT Y/C TRAP & ADDER TR91, L206 C522, C530
EXT Y+C
EXT CVBS
AV2 Y+C
AV2 CVBS
IC2 CVBS SWITCH
I²C2
Y/C DET AV2
AV2 Y/C DETECTOR TR3-8
I
AV2 R (C)
AV2 CVBS (Y)
AV2 Y/C TRAP & ADDER TR96, TR98, TR105, L208, C524-525
AV2 (AV)
AV2 CVBS (Y)
AV2 CVBS (Y)
R 1
G 4
C
AV2 C
B 6
FB 8
AV2 FB DISABLE
TR46
IC5 RGB SWITCH
AV3 (DECODER)
R 3
G 5
B 7
FB 10
AV3 FB DISABLE
TR45
AV R
AV G
AV B
FB CONVERTER TR106-108
AV FB
TR35
CVBS
TR37
PIP CVBS
TR44
IF CVBS/BB
AV3 CVBS
AV1 CVBS
SAT CVBS/BB
IC3 CVBS SWITCH
TR43
TR67
TR36
CLAMP ON/OFF
CLAMP OFF TR101 TR102
I²C2
AV1 (V TAPE)
AV1 CVBS
AV3 CVBS
H
F
DIAGRAM NO

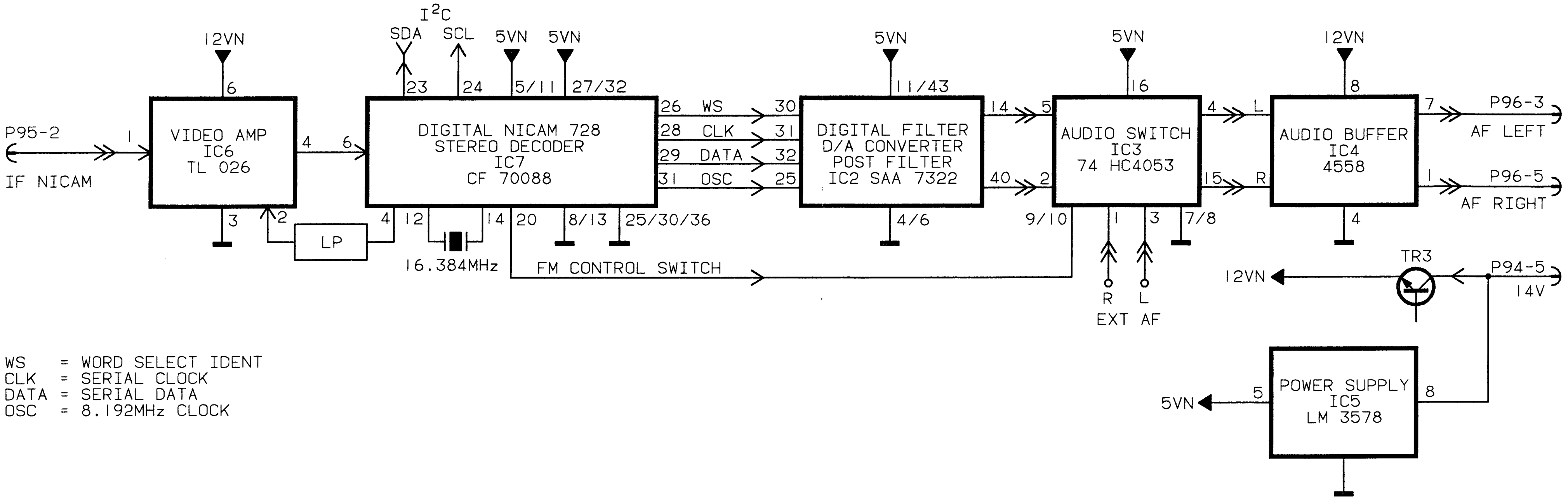
BLOCK DIAGRAM SOUND


PCB14 AV SWITCH
MASTER LINK I
L-
L+
R-
R+
ML L
ML R
1/2IC32 IC33 I
1/2IC32 IC34 I
IC1 I
IC7
IC14 I
IC28 IC29 I
IC30 IC31 I
AV1 SOUND L 33 R 33
AV2 SOUND L 9 R 9
AV3 SOUND L 8 R 8
ML L 13
ML R 13
EXT SOUND L 31 R 31
SAT SOUND L 29 R 29
IF SOUND L 28 R 28
DOLBY SURROUND
DOLBY CENTER
SOUND SWITCH MATRIX
LEFT CH IC11
RIGHT CH IC8
H
19
19
(CENTER) 11
17 TV L 9
17 R
(SURROUND)
37 L AV1 SOUND
37 R
35 L AV2 SOUND
35 R
1 L AV3 SOUND
1 R
15
15
I²C2
SOUND PROCESSING
LF 21
LR 19
RF 20
RR 18
IC10 J
9,10
3,2
8, 11
4,1
IC35 J
SWITCH LOGIC TR89-90 J
SOUND L/R CENTER
5
7 CENTER SOUND L
1 CENTER SOUND R
3
IC21 J
FROM µC
FROM POWER SUPPLY
MUTE SOUND
MUTE
MUTE SOUND TR99, TR61, TR62 K
6
2
7
1
IC25 J
HP L
HP R
MUTE SOUND DS
7 5
1 3
IC20 J
PCB11 CROSS OVER NETWORK (ABL) L
G
CENTER SOUND L
BASS BOOST 1/2IC3
C30
HPF IC4
TREBLE
ABL 1/2IC3, 1/2R41 (LDR)
LPF IC1, IC5
BASS
BASS BOOST & HPF IC2
LEVEL DETECTOR IC6 1/2R41 (LED)
SOUND MUTE
SOUND MUTE TR3-5, TR8, TR11
OUTPUT AMP IC1
PCB10 SOUND OUTPUT L
G
PCB11 CROSS OVER NETWORK (ABL) R
G
CENTER SOUND R
BASS BOOST 1/2IC3
C30
HPF IC4
TREBLE
ABL 1/2IC3, 1/2R41 (LDR)
LPF IC1, IC5
BASS
BASS BOOST & HPF IC2
LEVEL DETECTOR IC6 1/2R41 (LED)
SOUND MUTE
SOUND MUTE TR3-5, TR8, TR11
OUTPUT AMP IC1
PCB10 SOUND OUTPUT R
G
PHONES
IC1
PCB59 CAMCORDER INTERFACE & HEADPHONE
T
PCB30 DOLBY SURROUND
SOUND R
SOUND L
SURROUND L 3
SURROUND R 5
1
7
7KHz LPF
IC15 Q
SOUND MODE 4/5
10
12
14
15
SWITCH
13
5
3
IC2 Q
IC10
7
1
Q
L FRONT 5
R RIGHT 3
IC13
7
1
Q
POWER LINK MUTE TR2-5, TR11
Q
POWER LINK
REAR L
R
PL R
FRONT L
R
PL F
I²C2
SOUND LEFT 12,13
SOUND RIGHT 8,9
SOUND MODE SELECT & CONTROLS
LF 25
LR 23
RF 24
RR 22
L REAR
R REAR
IC7 Q
24 DOLBY LEFT 14,15
26 DOLBY RIGHT 10,11
IC12
3
5
1
7
P
9
10
DOLBY PRO-LOGIC DECODER
CONTROL LOGIC
IC5 P
SURROUND
30
PRE VOLUME REG & 7KHz LPF
IC1,IC4,IC14 P
I²C2
53
SURROUND PROCESSING
IC8 P
46
DYNAMIC RAM IC6 P
1/2IC11
7
5
P
DOLBY SURROUND
25
1/2IC11
DOLBY CENTER
3
1
P
SOUND MODE 4/5
12
PORT EXPANDER
IC3 P
11 PL R
10 PL F
I²C2

THE SIGNAL PATH IS SHOWN IN SOUND MODE 5

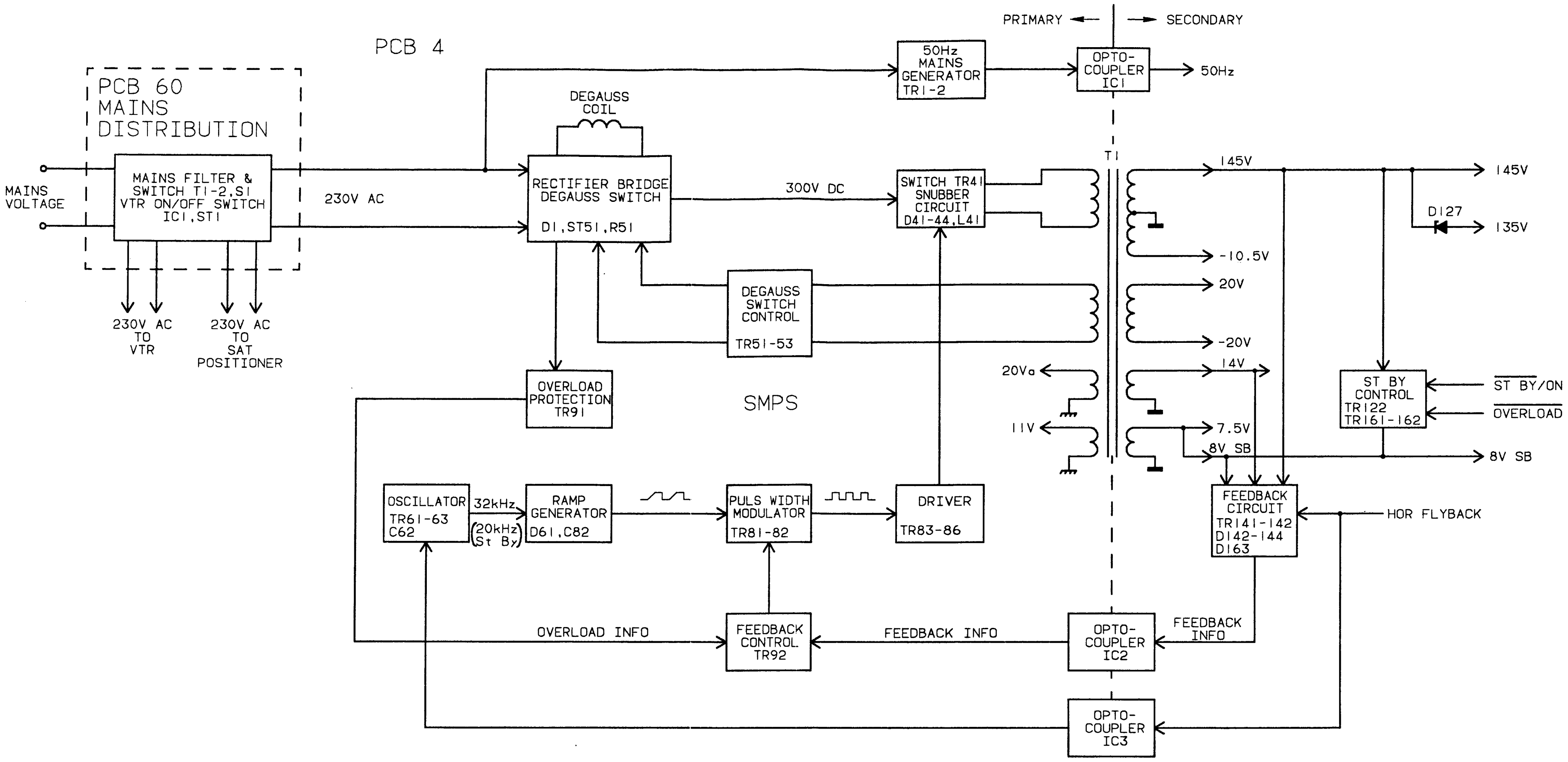
☐ DIAGRAM NO

BLOCK DIAGRAM NICAM

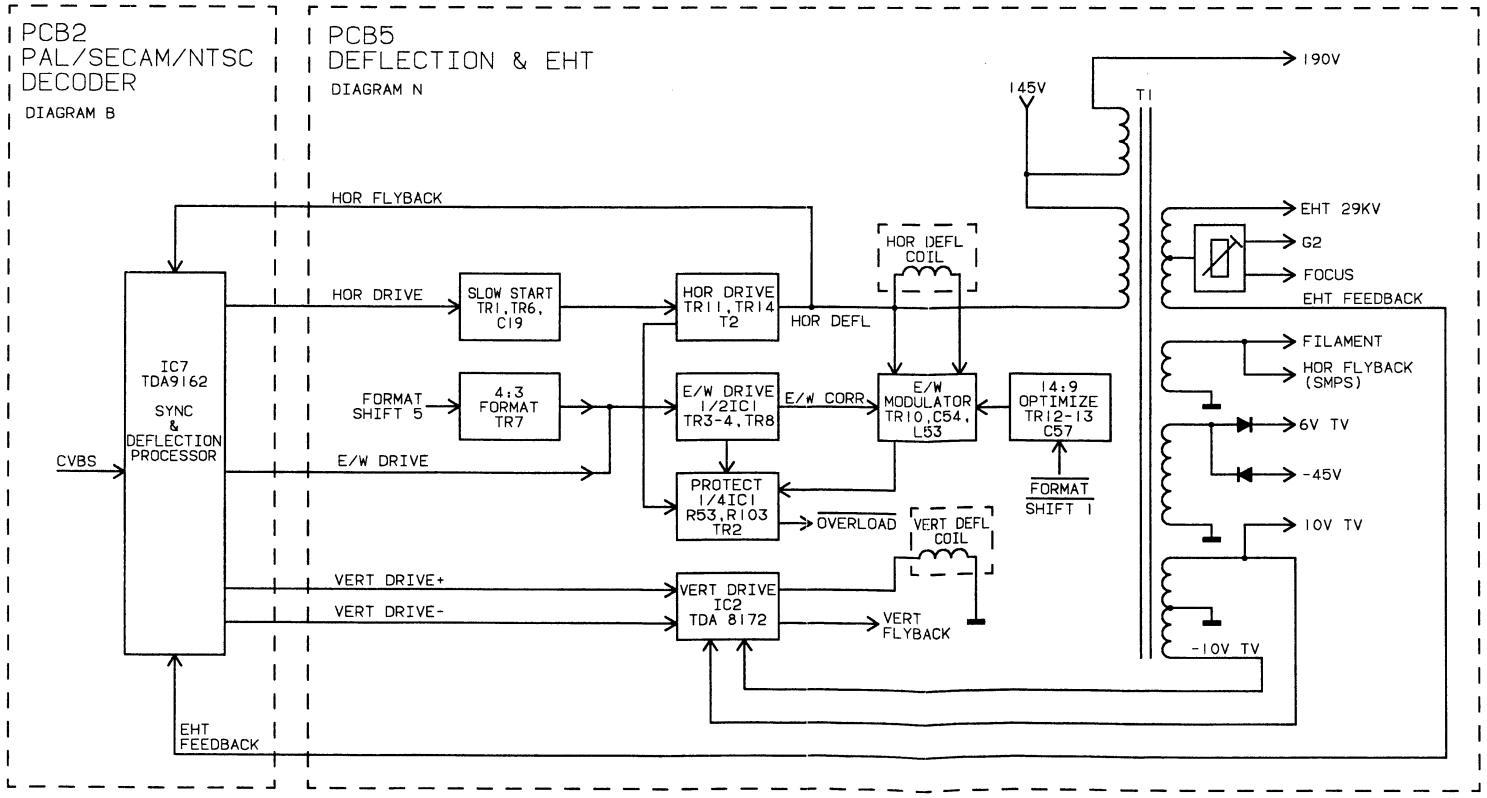

P95-2
IF NICAM
12VN
VIDEO AMP
IC6
TL 026
LP
I²C
SDA
SCL
5VN
5VN
DIGITAL NICAM 728
STEREO DECODER
IC7
CF 70088
16.384MHz
FM CONTROL SWITCH
WS
CLK
DATA
OSC
5VN
DIGITAL FILTER
D/A CONVERTER
POST FILTER
IC2 SAA 7322
5VN
AUDIO SWITCH
IC3
74 HC4053
R
L
EXT AF
12VN
AUDIO BUFFER
IC4
4558
P96-3
AF LEFT
P96-5
AF RIGHT
TR3
12VN
P94-5
14V
5VN
POWER SUPPLY
IC5
LM 3578

WS = WORD SELECT IDENT
CLK = SERIAL CLOCK
DATA = SERIAL DATA
OSC = 8.192MHz CLOCK

BLOCK DIAGRAM POWER SUPPLY


PCB 4
PRIMARY
SECONDARY
PCB 60
MAINS
DISTRIBUTION
MAINS
VOLTAGE
MAINS FILTER &
SWITCH T1-2,S1
VTR ON/OFF SWITCH
IC1,ST1
230V AC
230V AC
TO
VTR
230V AC
TO
SAT
POSITIONER
DEGAUSS
COIL
RECTIFIER BRIDGE
DEGAUSS SWITCH
D1,ST51,R51
300V DC
50Hz
MAINS
GENERATOR
TR1-2
OPTO-
COUPLER
IC1
50Hz
SWITCH TR41
SNUBBER
CIRCUIT
D41-44,L41
T1
145V
145V
D127
135V
-10.5V
20V
-20V
14V
20Va
11V
7.5V
8V SB
8V SB
DEGAUSS
SWITCH
CONTROL
TR51-53
OVERLOAD
PROTECTION
TR91
SMPS
ST BY
CONTROL
TR122
TR161-162
ST BY/ON
OVERLOAD
OSCILLATOR
TR61-63
C62
32kHz
(20kHz
St By)
RAMP
GENERATOR
D61,C82
PULS WIDTH
MODULATOR
TR81-82
DRIVER
TR83-86
FEEDBACK
CIRCUIT
TR141-142
D142-144
D163
HOR FLYBACK
OVERLOAD INFO
FEEDBACK
CONTROL
TR92
FEEDBACK INFO
OPTO-
COUPLER
IC2
FEEDBACK
INFO
OPTO-
COUPLER
IC3

BLOCK DIAGRAM DEFLECTION


PCB2
PAL/SECAM/NTSC
DECODER
DIAGRAM B
PCB5
DEFLECTION & EHT
DIAGRAM N
145V
T1
190V
HOR FLYBACK
HOR DRIVE
SLOW START
TR1,TR6,
C19
HOR DRIVE
TR11,TR14
T2
HOR DEFL
COIL
HOR DEFL
EHT 29KV
G2
FOCUS
EHT FEEDBACK
IC7
TDA9162
SYNC
&
DEFLECTION
PROCESSOR
CVBS
FORMAT
SHIFT 5
4:3
FORMAT
TR7
E/W DRIVE
1/2IC1
TR3-4,TR8
E/W CORR
E/W
MODULATOR
TR10,C54,
L53
14:9
OPTIMIZE
TR12-13
C57
FORMAT
SHIFT 1
FILAMENT
HOR FLYBACK
(SMPS)
6V TV
-45V
E/W DRIVE
PROTECT
1/4IC1
R53,R103
TR2
OVERLOAD
VERT DEFL
COIL
10V TV
VERT DRIVE+
VERT DRIVE-
VERT DRIVE
IC2
TDA 8172
VERT
FLYBACK
-10V TV
EHT
FEEDBACK

BLOCK DIAGRAM PAL/SECAM/NTSC DECODER

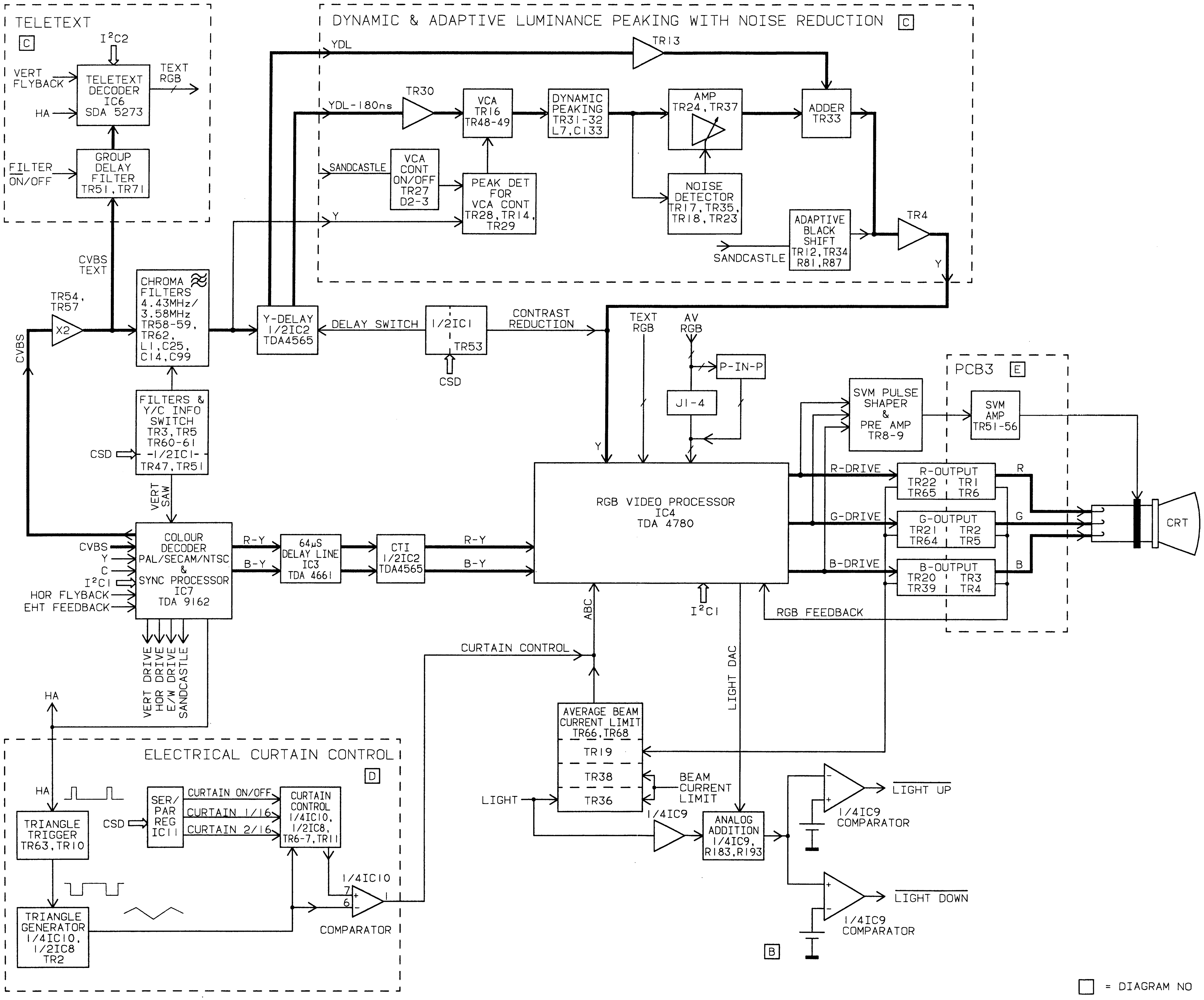

TELETEXT
C
I²C2
VERT FLYBACK
HA
TELETEXT DECODER IC6 SDA 5273
TEXT RGB
FILTER ON/OFF
GROUP DELAY FILTER TR51, TR71
CVBS TEXT
TR54, TR57
X2
CVBS
CHROMA FILTERS 4.43MHz/ 3.58MHz TR58-59, TR62, L1, C25, C14, C99
FILTERS & Y/C INFO SWITCH TR3, TR5 TR60-61 -1/2IC1- TR47, TR51
CSD
VERT SAW
DYNAMIC & ADAPTIVE LUMINANCE PEAKING WITH NOISE REDUCTION
C
YDL
TR13
YDL-180ns
TR30
VCA TR16 TR48-49
DYNAMIC PEAKING TR31-32 L7, C133
AMP TR24, TR37
ADDER TR33
SANDCASTLE
VCA CONT ON/OFF TR27 D2-3
PEAK DET FOR VCA CONT TR28, TR14, TR29
NOISE DETECTOR TR17, TR35, TR18, TR23
Y
ADAPTIVE BLACK SHIFT TR12, TR34 R81, R87
SANDCASTLE
TR4
Y
Y-DELAY 1/2IC2 TDA4565
DELAY SWITCH
1/2IC1 TR53
CSD
CONTRAST REDUCTION
TEXT RGB
AV RGB
P-IN-P
J1-4
Y
RGB VIDEO PROCESSOR IC4 TDA 4780
SVM PULSE SHAPER & PRE AMP TR8-9
PCB3
E
SVM AMP TR51-56
R-DRIVE
G-DRIVE
B-DRIVE
R-OUTPUT TR22 TR1 TR65 TR6
G-OUTPUT TR21 TR2 TR64 TR5
B-OUTPUT TR20 TR3 TR39 TR4
R
G
B
CRT
RGB FEEDBACK
CVBS
Y
C
I²C1
HOR FLYBACK
EHT FEEDBACK
COLOUR DECODER PAL/SECAM/NTSC & SYNC PROCESSOR IC7 TDA 9162
R-Y
B-Y
64µS DELAY LINE IC3 TDA 4661
CTI 1/2IC2 TDA4565
R-Y
B-Y
ABC
I²C1
LIGHT DAC
VERT DRIVE
HOR DRIVE
E/W DRIVE
SANDCASTLE
HA
CURTAIN CONTROL
AVERAGE BEAM CURRENT LIMIT TR66, TR68
TR19
TR38
TR36
BEAM CURRENT LIMIT
LIGHT
1/4IC9
ANALOG ADDITION 1/4IC9, R183, R193
LIGHT UP
1/4IC9 COMPARATOR
LIGHT DOWN
1/4IC9 COMPARATOR
B
ELECTRICAL CURTAIN CONTROL
D
HA
TRIANGLE TRIGGER TR63, TR10
CSD
SER/ PAR REG IC11
CURTAIN ON/OFF
CURTAIN 1/16
CURTAIN 2/16
CURTAIN CONTROL 1/4IC10, 1/2IC8, TR6-7, TR11
1/4IC10
7
6
1
COMPARATOR
TRIANGLE GENERATOR 1/4IC10, 1/2IC8 TR2
□ = DIAGRAM NO

DIAGRAM A TUNER & IF SYSTEM B/G/M/I/D/K

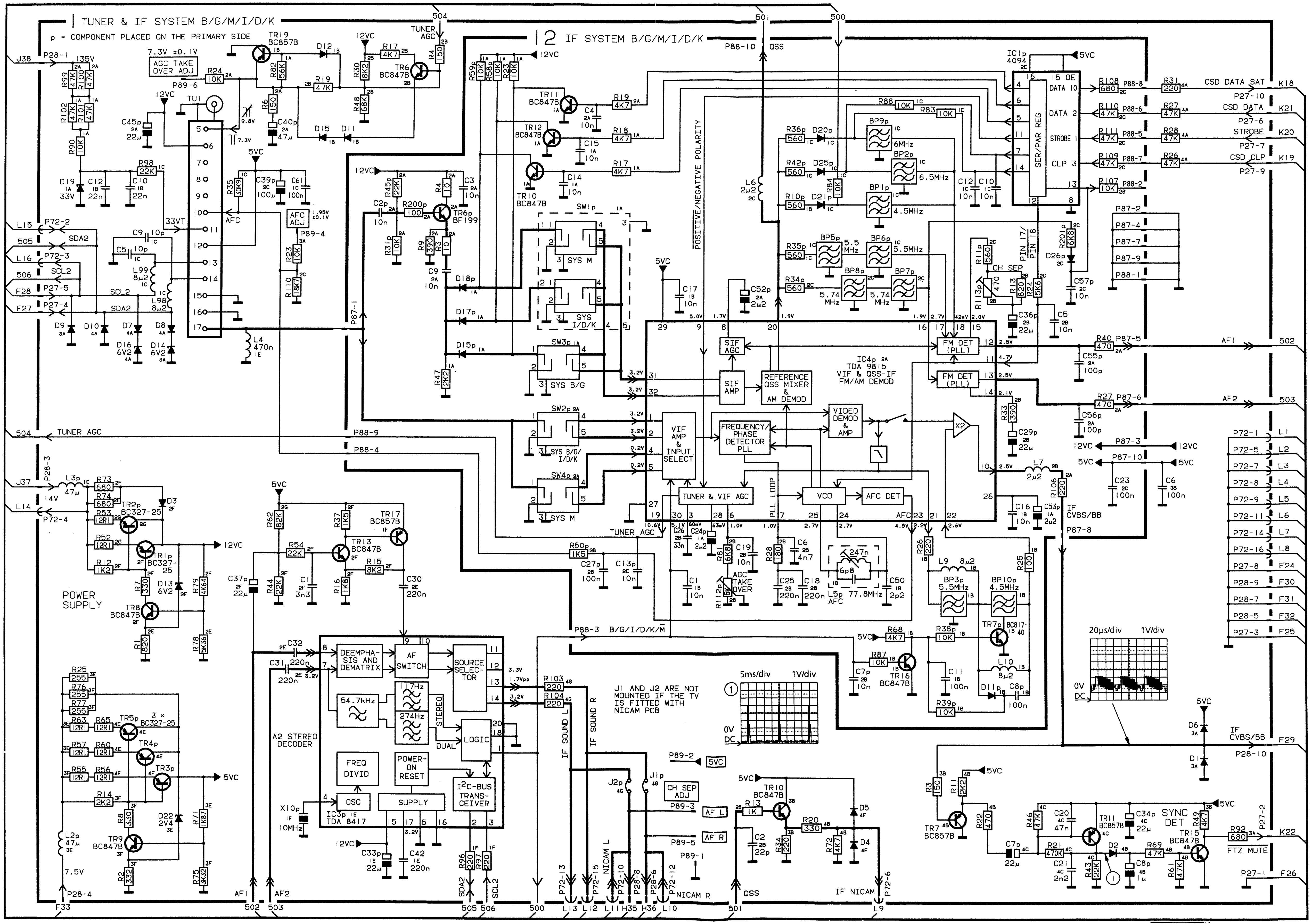

1 TUNER & IF SYSTEM B/G/M/I/D/K
p = COMPONENT PLACED ON THE PRIMARY SIDE
12 IF SYSTEM B/G/M/I/D/K
7.3V ±0.1V
AGC TAKE OVER ADJ
TU1
TUNER AGC
AFC
AFC ADJ
POSITIVE/NEGATIVE POLARITY
IC1p 4094
SER/PAR REG
DATA 1
DATA 2
STROBE 1
CLP 3
CSD DATA SAT
CSD DATA
STROBE
CSD CLP
SW1p
SYS M
SYS I/D/K
SW3p
SYS B/G
SW2p
SYS B/G/I/D/K
SW4p
SYS M
IC4p TDA 9815 VIF & QSS-IF FM/AM DEMOD
SIF AGC
SIF AMP
REFERENCE QSS MIXER & AM DEMOD
FM DET (PLL)
VIF AMP & INPUT SELECT
FREQUENCY/PHASE DETECTOR PLL
VIDEO DEMOD & AMP
TUNER & VIF AGC
PLL LOOP
VCO
AFC DET
X2
AGC TAKE OVER
77.8MHz
L5p AFC
6MHz
6.5MHz
4.5MHz
5.5 MHz
5.5MHz
5.74 MHz
4.5MHz
CH SEP
PIN 17/PIN 18
AF1
AF2
IF CVBS/BB
POWER SUPPLY
B/G/I/D/K/M
IC3p TDA 8417
A2 STEREO DECODER
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
OSC
SUPPLY
I²C-BUS TRANSCEIVER
X10p 10MHz
J1 AND J2 ARE NOT MOUNTED IF THE TV IS FITTED WITH NICAM PCB
IF SOUND L
IF SOUND R
NICAM L
NICAM R
CH SEP ADJ
AF L
AF R
QSS
IF NICAM
5ms/div 1V/div
20µs/div 1V/div
0V DC
SYNC DET
FTZ MUTE
TR15 BC847B
TR16 BC847B
TR10 BC847B
TR7p BC817-40
TR7 BC857B
TR11 BC857B
TR19 BC857B
TR6 BC847B
TR6p BF199
TR17 BC857B
TR13 BC847B
TR2p BC327-25
TR1p BC327-25
TR8 BC847B
TR5p TR4p TR3p 3 × BC327-25
TR9 BC847B
J38 J37 F33 F26 F29 K22 K18 K21 K20 K19
L15 L16 L14 F28 F27 505 506 504 502 503 500 501
L1 L2 L3 L4 L5 L6 L7 L8 F24 F30 F31 F32 F25
L13 L12 L11 H35 H36 L10 L9
12VC 5VC 135V 33VT 14V 7.5V

DIAGRAM A TUNER & SYSTEM B/G/L/L' & SYSTEM B/G/L/L'/I

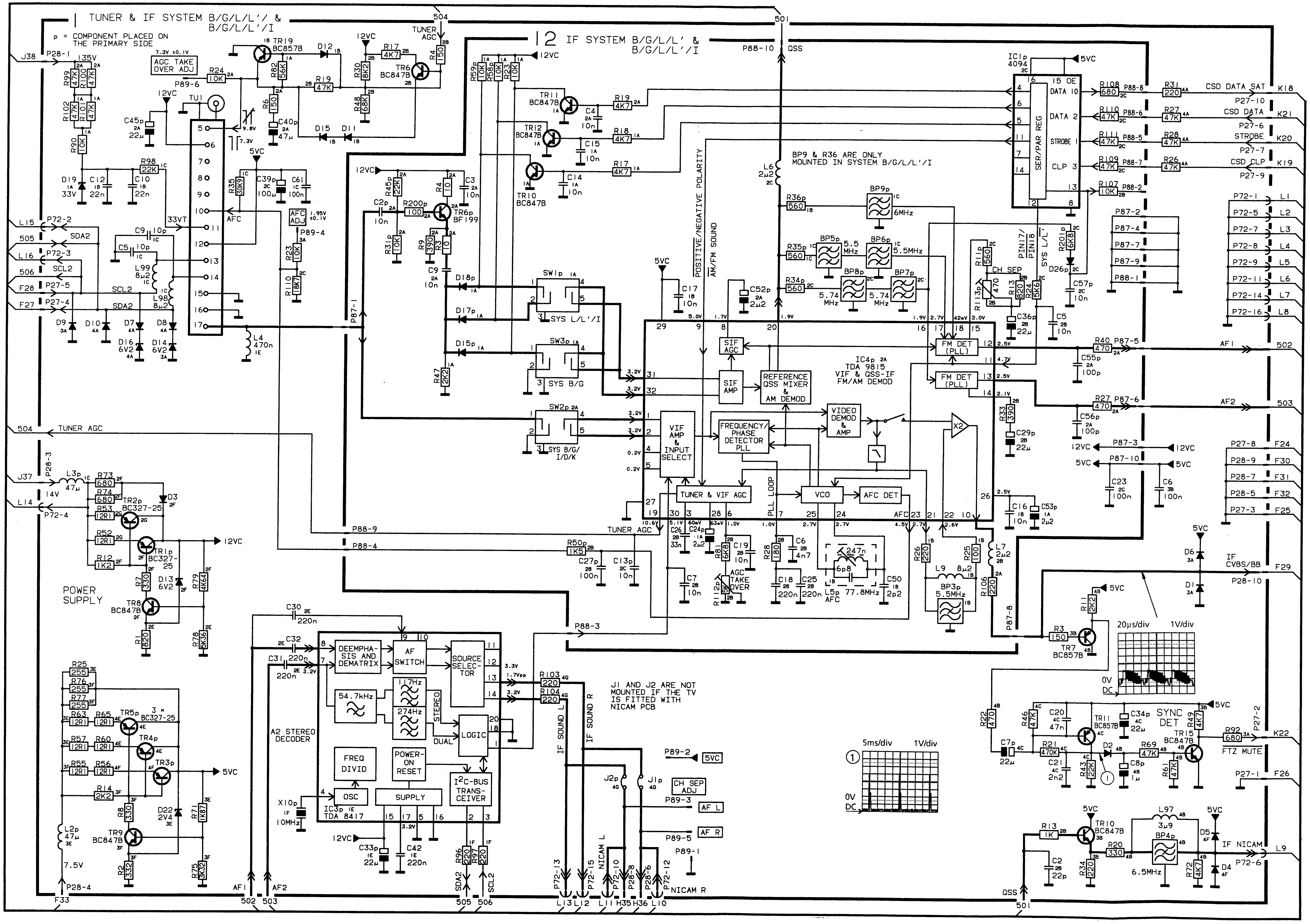
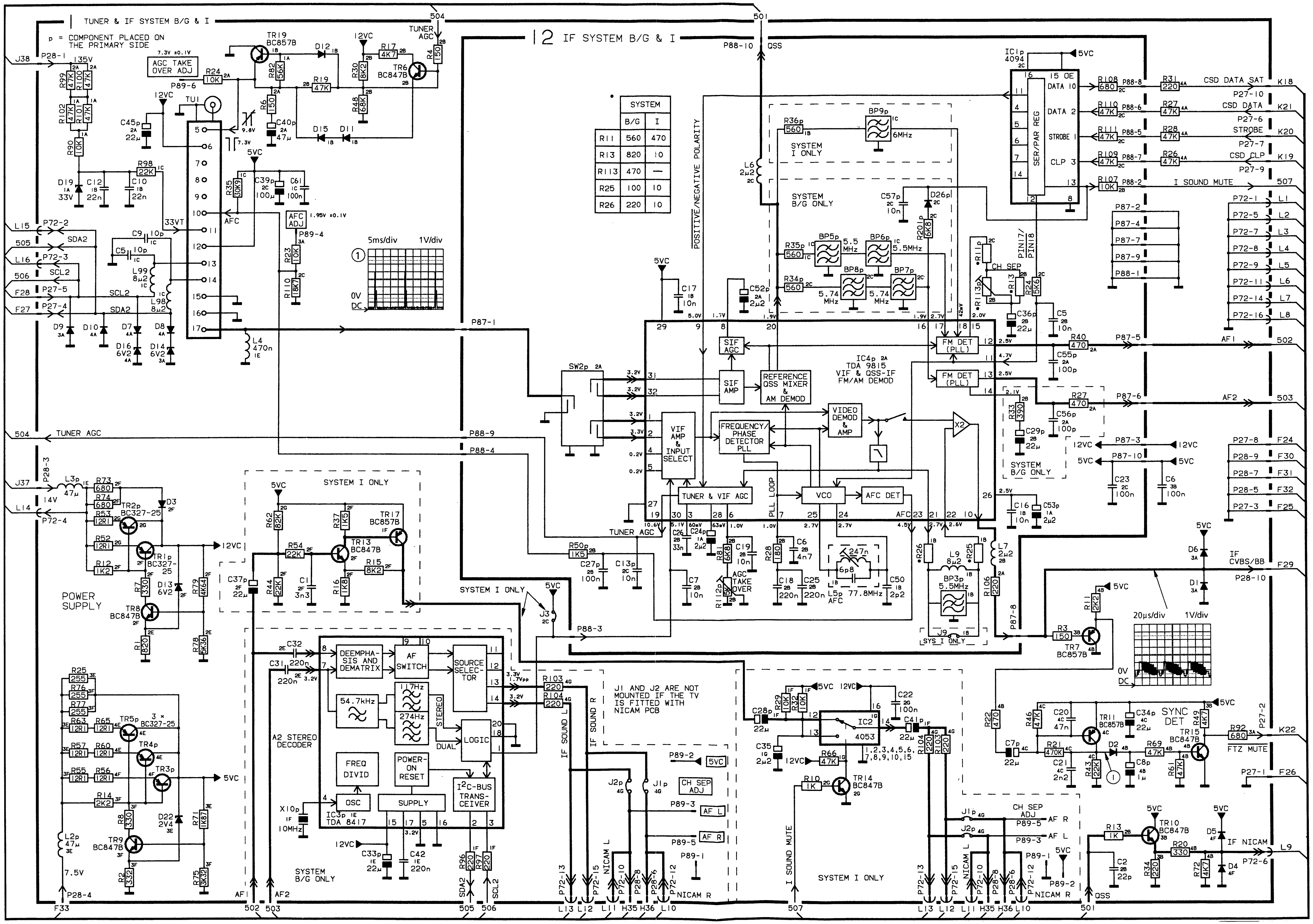
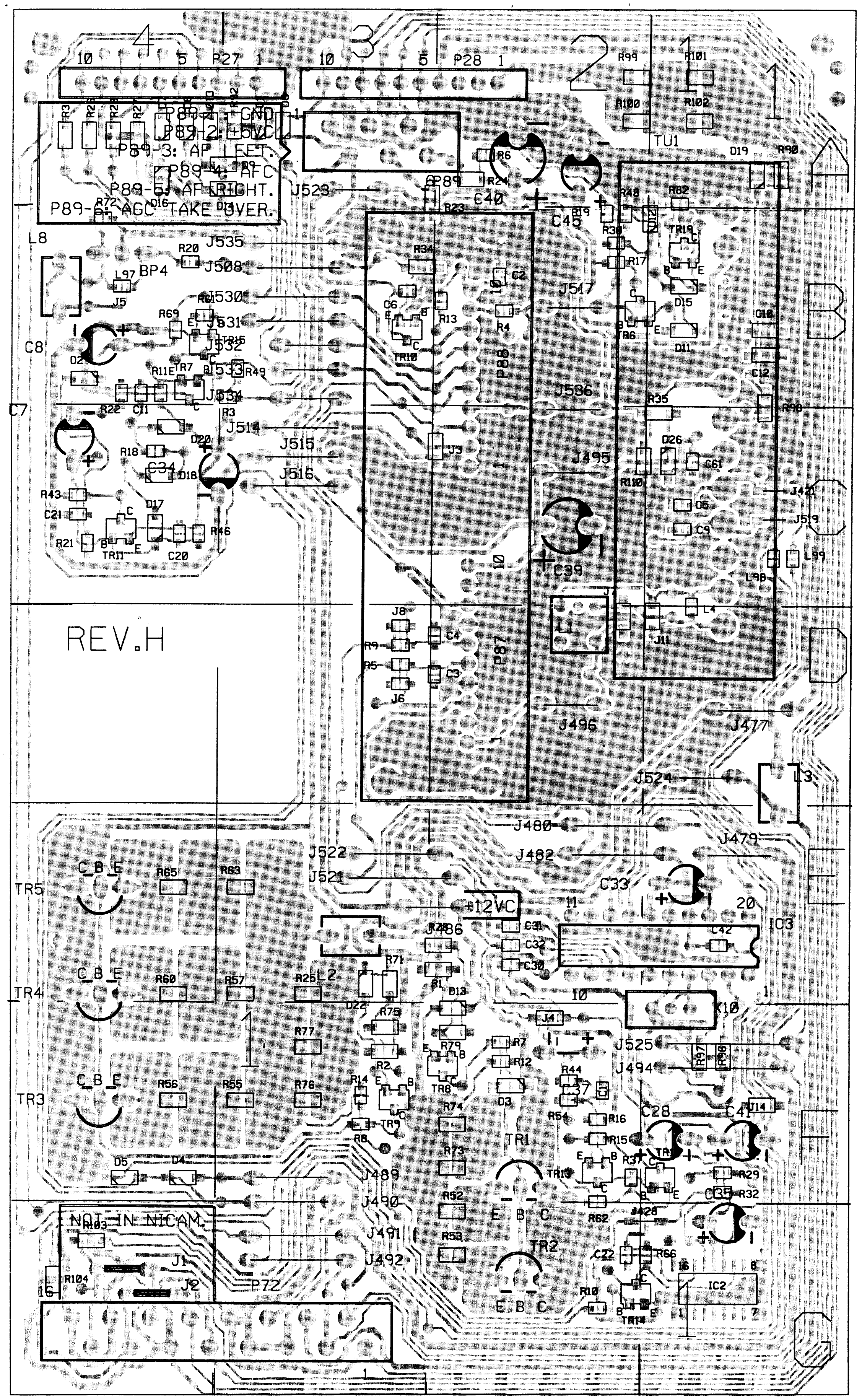

1 TUNER & IF SYSTEM B/G/L/L'/ & B/G/L/L'/I
p = COMPONENT PLACED ON THE PRIMARY SIDE
AGC TAKE OVER ADJ
TU1
AFC
AFC ADJ
2 IF SYSTEM B/G/L/L' & B/G/L/L'/I
TUNER AGC
QSS
IC1p 4094
SER/PAR REG
15 OE
DATA 1
DATA 2
STROBE 1
CLP 3
CSD DATA SAT
CSD DATA
STROBE
CSD CLP
BP9 & R36 ARE ONLY MOUNTED IN SYSTEM B/G/L/L'/I
POSITIVE/NEGATIVE POLARITY
AM/FM SOUND
SW1p
SYS L/L'/I
SW3p
SYS B/G
SW2p
SYS B/G/ I/D/K
IC4p TDA 9815 VIF & QSS-IF FM/AM DEMOD
SIF AGC
SIF AMP
REFERENCE QSS MIXER & AM DEMOD
FM DET (PLL)
VIF AMP & INPUT SELECT
FREQUENCY/ PHASE DETECTOR PLL
VIDEO DEMOD & AMP
X2
TUNER & VIF AGC
PLL LOOP
VCO
AFC DET
AGC TAKE OVER
L5p 77.8MHz AFC
BP3p 5.5MHz
CH SEP
PIN17/ PIN18
SYS L/L'
AF1
AF2
IF CVBS/BB
POWER SUPPLY
A2 STEREO DECODER
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
I²C-BUS TRANSCEIVER
OSC
SUPPLY
IC3p TDA 8417
X10p 10MHz
J1 AND J2 ARE NOT MOUNTED IF THE TV IS FITTED WITH NICAM PCB
IF SOUND L
IF SOUND R
NICAM L
NICAM R
CH SEP ADJ
AF L
AF R
5ms/div 1V/div
20μs/div 1V/div
0V DC
SYNC DET
FTZ MUTE
IF NICAM
6.5MHz
BP4p
5VC
12VC
J38 J37 L15 L16 505 506 F28 F27 504 L14 F33 502 503 505 506 L13 L12 L11 H35 H36 L10 501
K18 K21 K20 K19 L1 L2 L3 L4 L5 L6 L7 L8 502 503 F24 F30 F31 F32 F25 F29 K22 F26 L9

DIAGRAM A TUNER & IF SYSTEM B/G & SYSTEM I

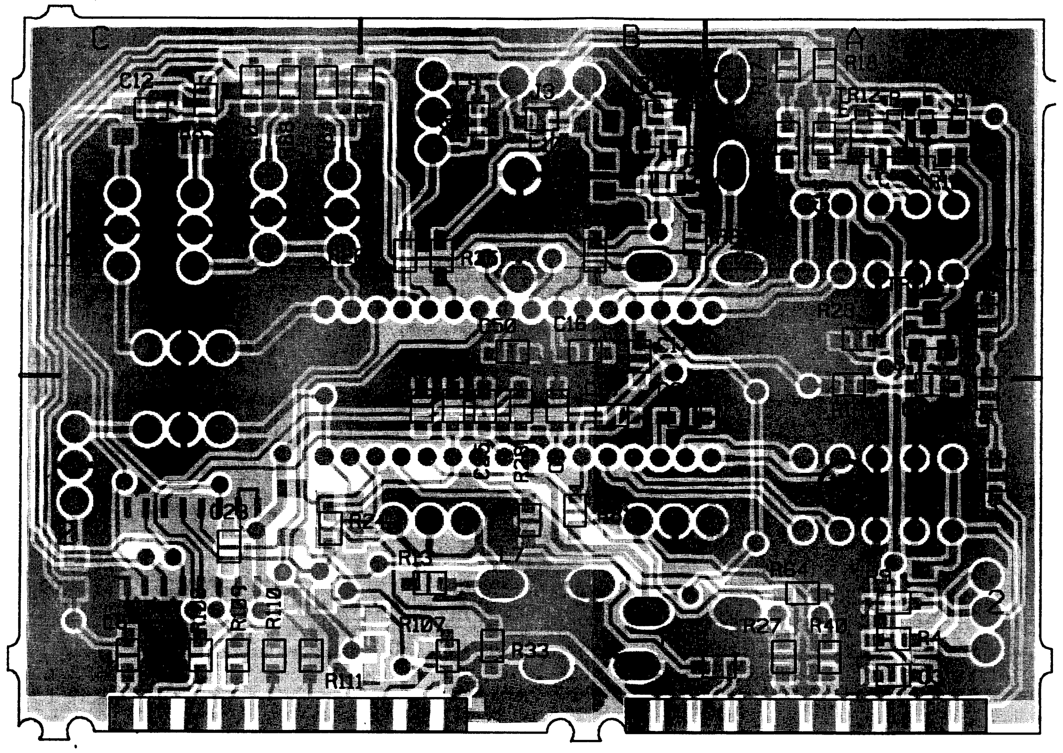

TUNER & IF SYSTEM B/G & I
p = COMPONENT PLACED ON THE PRIMARY SIDE
AGC TAKE OVER ADJ
TUNER AGC
TU1
AFC ADJ
5ms/div
1V/div
①
0V DC
12 IF SYSTEM B/G & I
POSITIVE/NEGATIVE POLARITY
SYSTEM I ONLY
SYSTEM B/G ONLY
IC1p 4094
SER/PAR REG
DATA 10
DATA 2
STROBE 1
CLP 3
CSD DATA SAT
CSD DATA
STROBE
CSD CLP
I SOUND MUTE
IC4p TDA 9815 VIF & QSS-IF FM/AM DEMOD
SIF AGC
SIF AMP
REFERENCE QSS MIXER & AM DEMOD
VIF AMP & INPUT SELECT
FREQUENCY/PHASE DETECTOR PLL
VIDEO DEMOD & AMP
TUNER & VIF AGC
VCO
AFC DET
FM DET (PLL)
X2
PLL LOOP
AGC TAKE OVER
CH SEP
AF1
AF2
SYSTEM B/G ONLY
IF CVBS/BB
SYS I ONLY
20µs/div
1V/div
SYNC DET
FTZ MUTE
IF NICAM
POWER SUPPLY
SYSTEM I ONLY
A2 STEREO DECODER
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
OSC
SUPPLY
I²C-BUS TRANSCEIVER
IC3p TDA 8417
SYSTEM B/G ONLY
J1 AND J2 ARE NOT MOUNTED IF THE TV IS FITTED WITH NICAM PCB
IF SOUND L
IF SOUND R
CH SEP ADJ
AF L
AF R
IC2 4053
I SOUND MUTE
NICAM L
NICAM R
QSS

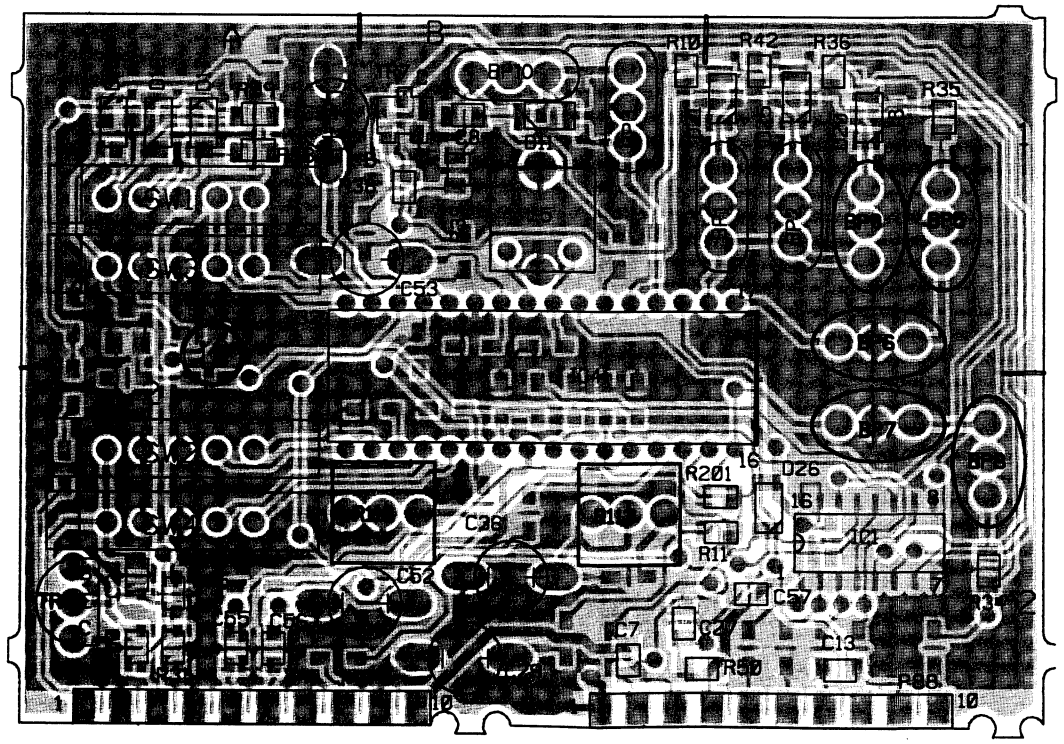
SYSTEM	B/G	I
R11	560	470
R13	820	10
R113	470	—
R25	100	10
R26	220	10

PCB 1


P27
P28
P89-1: GND
P89-2: +5VC
P89-3: AF LEFT.
P89-4: AFC
P89-5: AF RIGHT.
P89-6: AGC TAKE OVER.
TU1
P87
P88
REV.H
+12VC
IC3
IC2
TR1
TR2
TR3
TR4
TR5
NOT IN NICAM
P72
REV.H

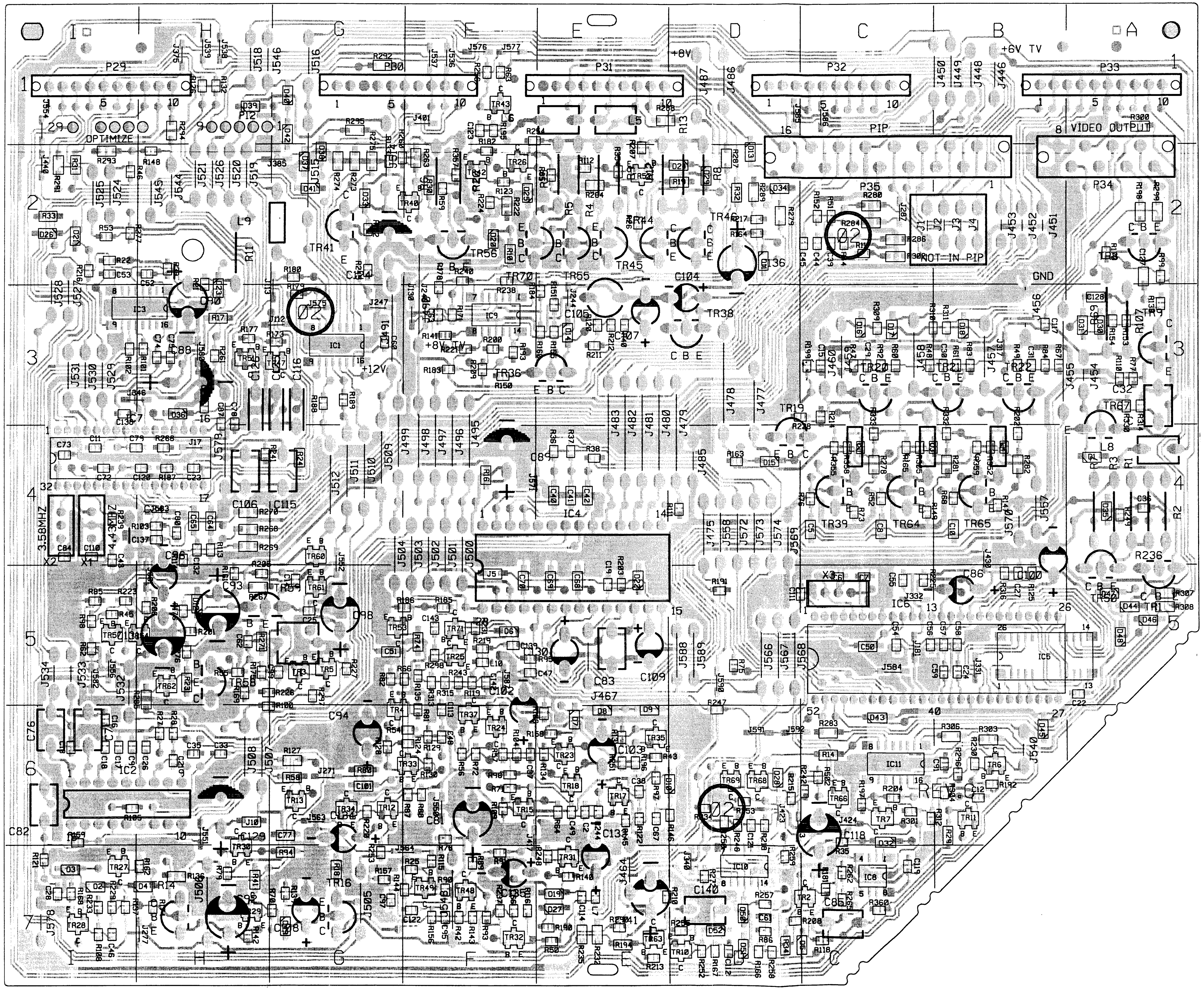
PCB 12





PCB 2

Oscilloscope pictures for diagram B


I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
P29
P30
P31
P32
P33
OPTIMIZE
P12
+8V
+6V TV
PIP
VIDEO OUTPUT
P34
P35
NOT IN PIP
GND
+12V
+8V
IC1
IC2
IC3
IC4
IC5
IC6
IC9
IC10
IC11
3.58MHZ
4.43MHZ
X1
X2
X3

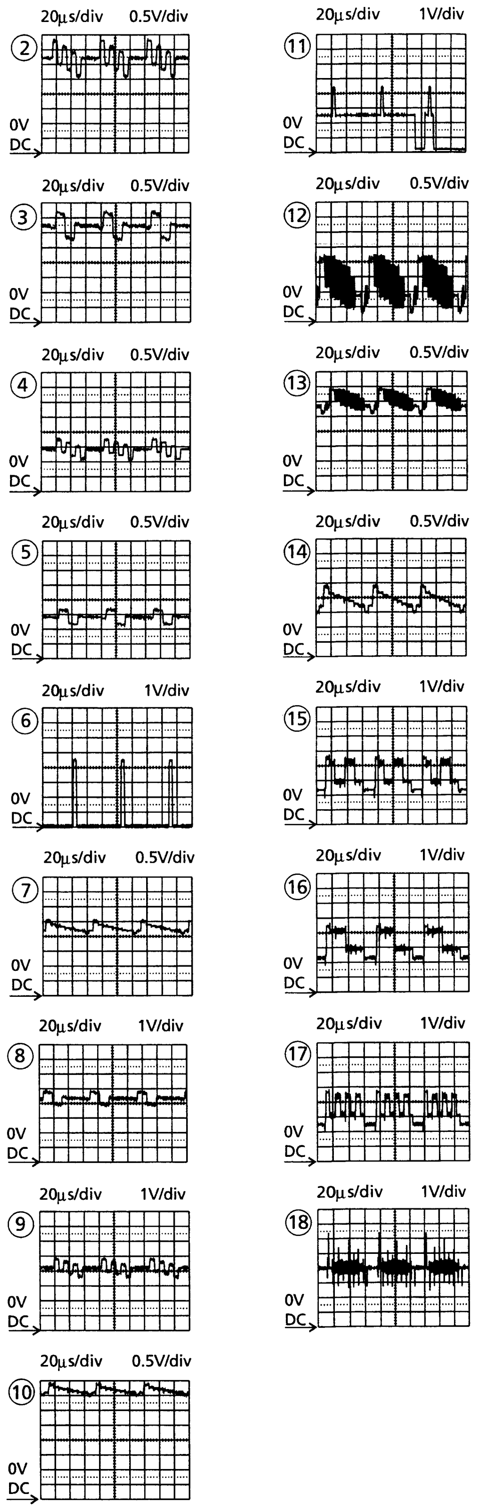


DIAGRAM B PAL/SECAM/NTSC COLOUR DECODER

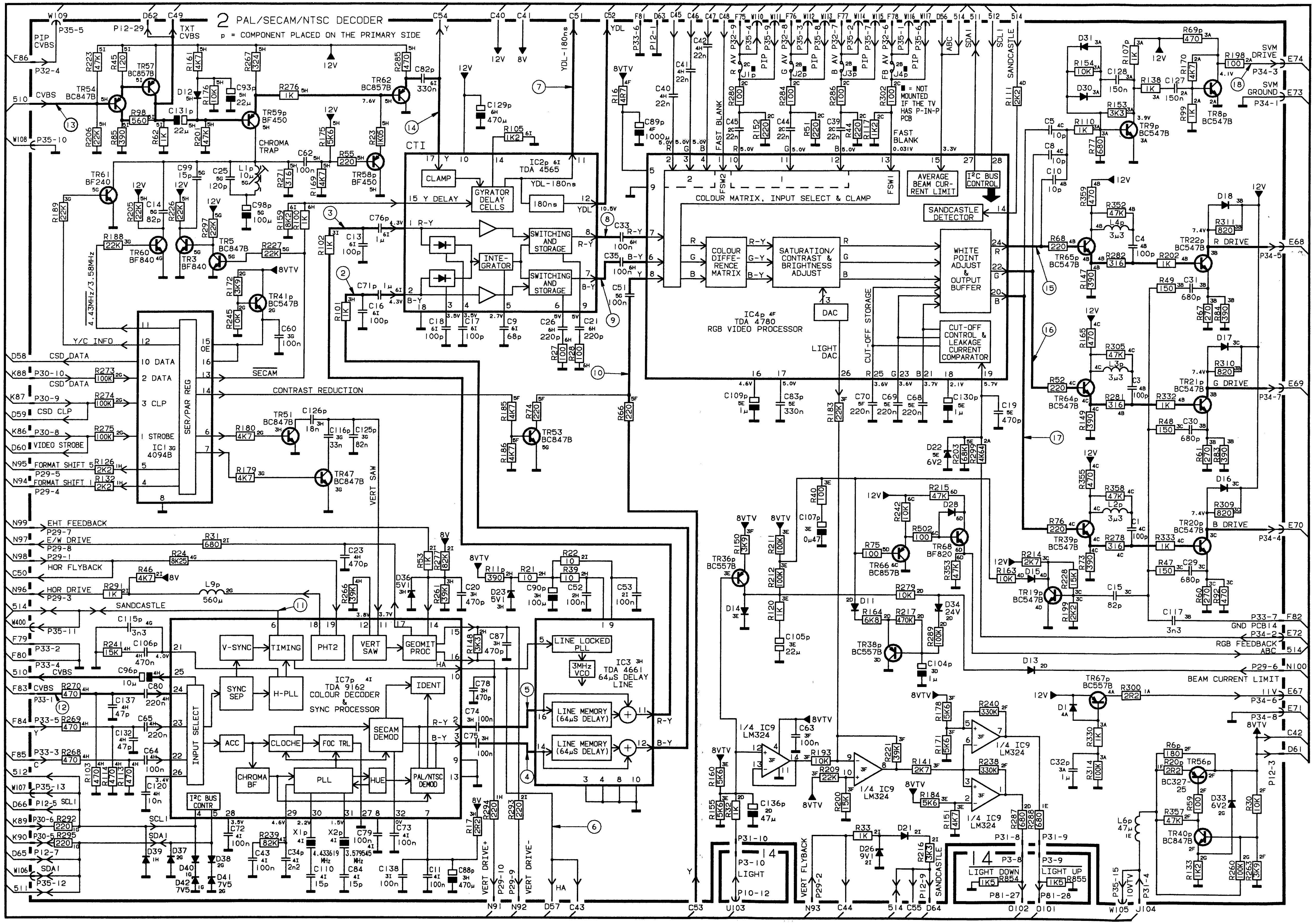

2 PAL/SECAM/NTSC DECODER
p = COMPONENT PLACED ON THE PRIMARY SIDE
PIP CVBS
TXT CVBS
CVBS
CHROMA TRAP
CTI
IC2p TDA 4565
CLAMP
GYRATOR DELAY CELLS
15 Y DELAY
YDL-180ns
180ns
SWITCHING AND STORAGE
INTEGRATOR
IC1 4094B
SER/PAR REG
CSD DATA
CSD CLP
VIDEO STROBE
FORMAT SHIFT
Y/C INFO
SECAM
CONTRAST REDUCTION
EHT FEEDBACK
E/W DRIVE
HOR FLYBACK
HOR DRIVE
SANDCASTLE
IC7p TDA 9162 COLOUR DECODER & SYNC PROCESSOR
V-SYNC
TIMING
PHT2
VERT SAW
GEOMIT PROC
SYNC SEP
H-PLL
IDENT
INPUT SELECT
ACC
CLOCHE
FOC TRL
SECAM DEMOD
CHROMA BF
PLL
HUE
PAL/NTSC DEMOD
I²C BUS CONTR
IC3 TDA 4661 64µS DELAY LINE
LINE LOCKED PLL
3MHz VCO
LINE MEMORY (64µS DELAY)
4.433619 MHz
3.579545 MHz
VERT DRIVE+
VERT DRIVE-
IC4p TDA 4780 RGB VIDEO PROCESSOR
COLOUR MATRIX, INPUT SELECT & CLAMP
COLOUR DIFFERENCE MATRIX
SATURATION/ CONTRAST & BRIGHTNESS ADJUST
WHITE POINT ADJUST & OUTPUT BUFFER
AVERAGE BEAM CURRENT LIMIT
I²C BUS CONTROL
SANDCASTLE DETECTOR
DAC
LIGHT DAC
CUT-OFF STORAGE
CUT-OFF CONTROL & LEAKAGE CURRENT COMPARATOR
FAST BLANK
■ = NOT MOUNTED IF THE TV HAS P-IN-P PCB
SVM DRIVE
SVM GROUND
R DRIVE
G DRIVE
B DRIVE
GND PCB14
RGB FEEDBACK
BEAM CURRENT LIMIT
1/4 IC9 LM324
LIGHT
LIGHT DOWN
LIGHT UP
VERT FLYBACK

DIAGRAM C TELETEXT & LUMINANCE PEAKING

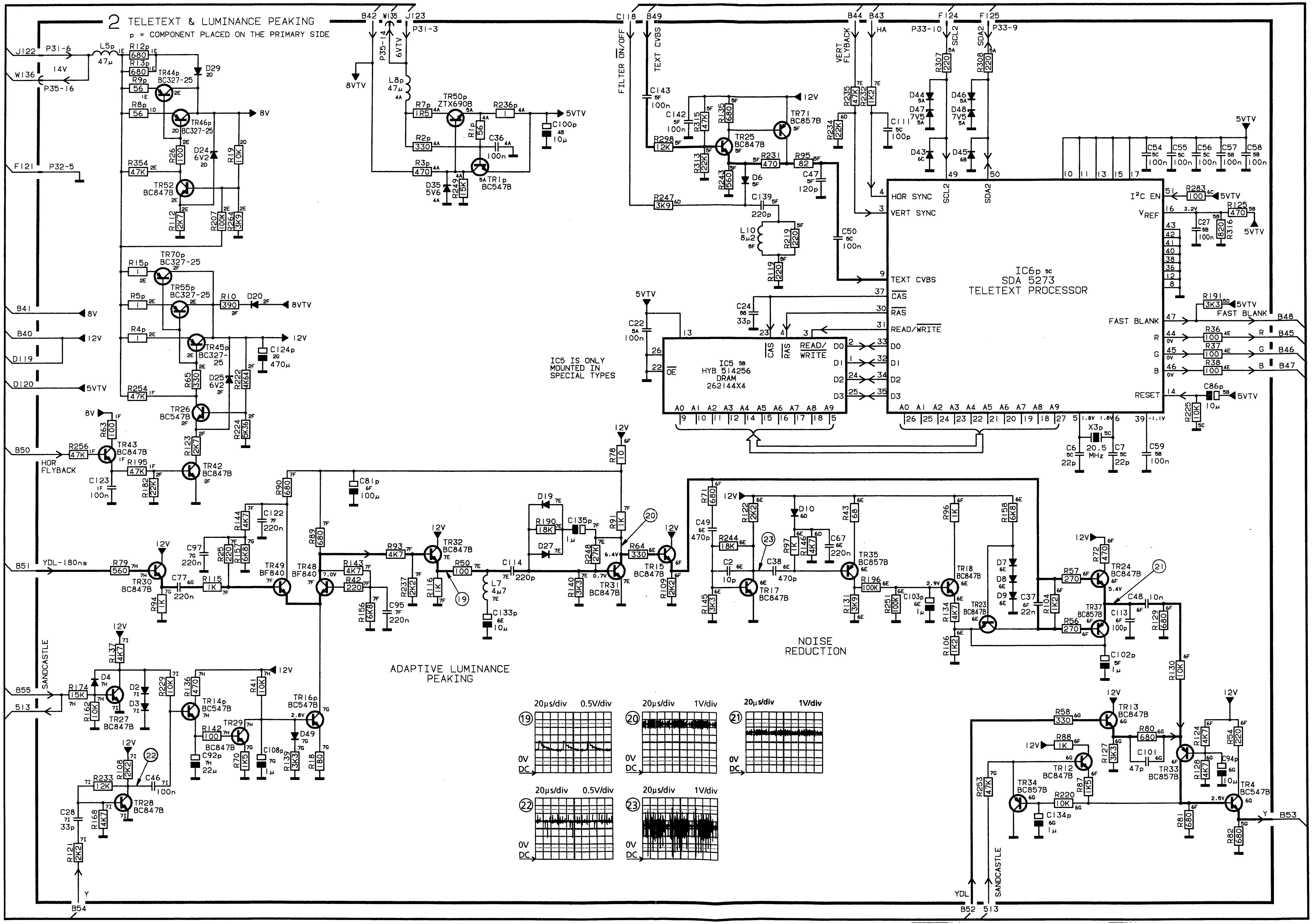
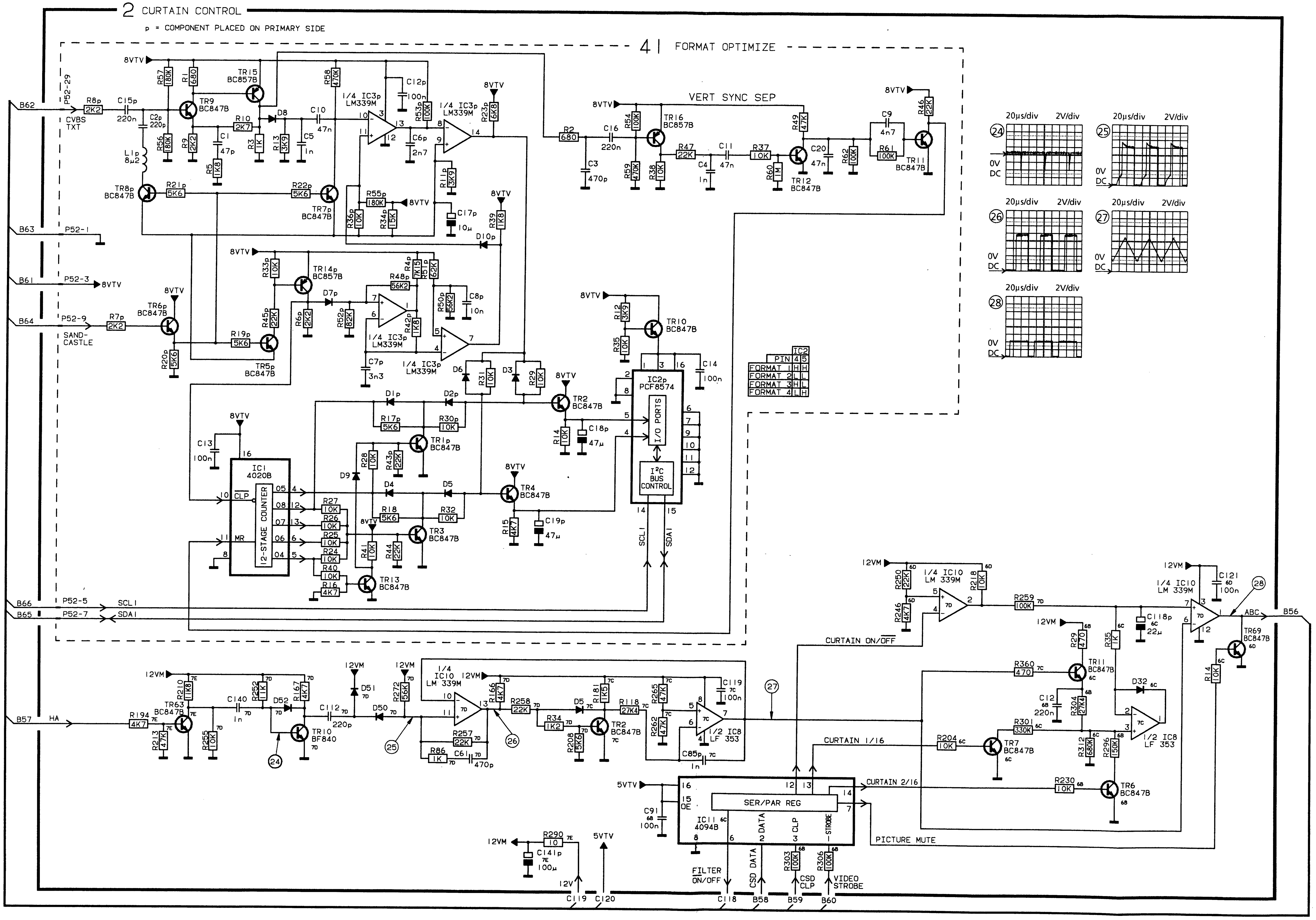
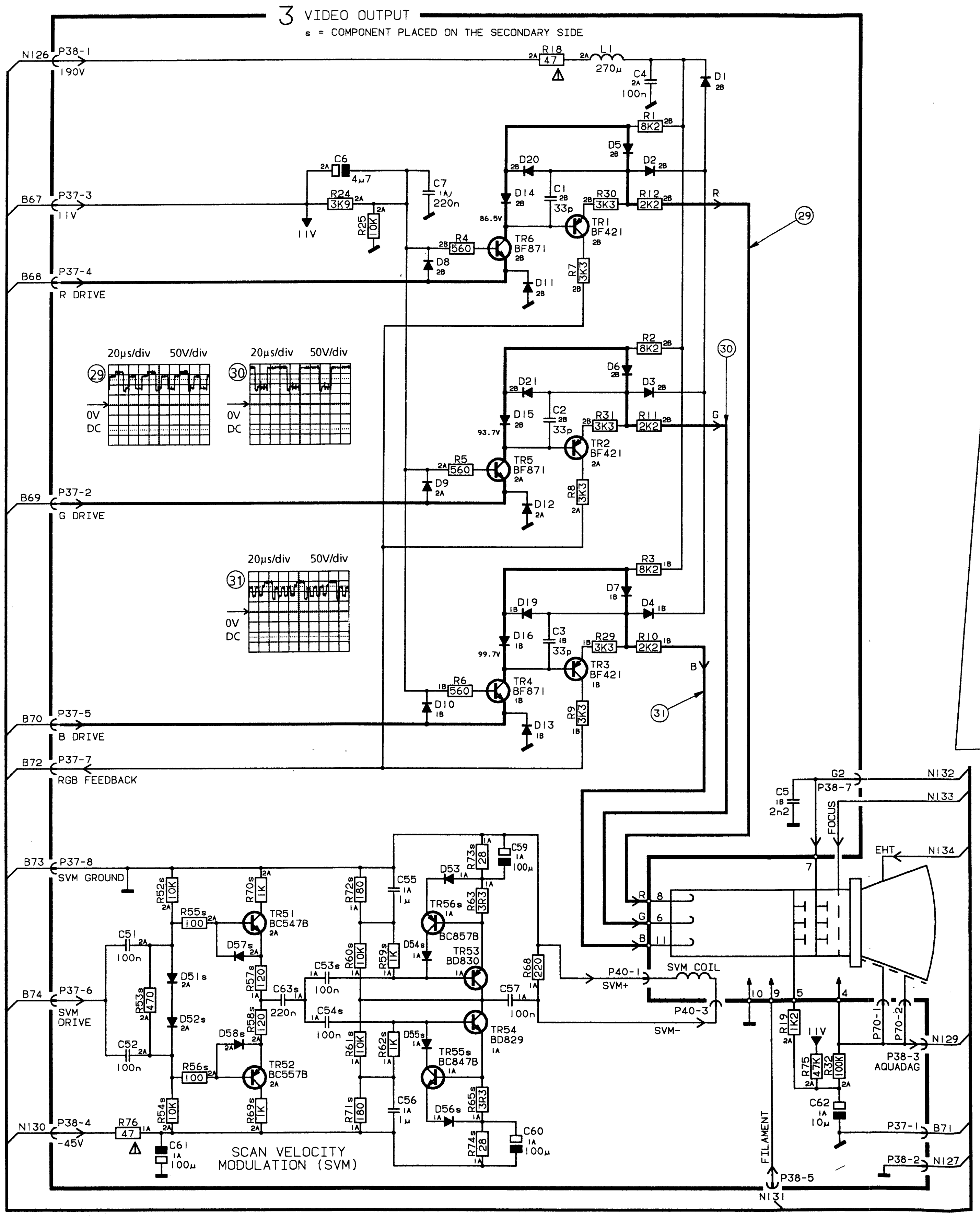

2 TELETEXT & LUMINANCE PEAKING
p = COMPONENT PLACED ON THE PRIMARY SIDE
J122 P31-6
W136 P35-16
14V
F121 P32-5
B41
B40
D119
D120
B50
HOR FLYBACK
B51 YDL-180ns
B55
513
SANDCASTLE
B54
Y
B42 W135 J123
P35-14 6VTV P31-3
8VTV
C118 B49
FILTER ON/OFF
TEXT CVBS
B44 B43
VERT FLYBACK
HA
F124 F125
P33-10 P33-9
SCL2 SDA2
5VTV
8V
12V
TR44p BC327-25
TR46p BC327-25
TR52 BC847B
TR70p BC327-25
TR55p BC327-25
TR45p BC327-25
TR26 BC547B
TR43 BC847B
TR42 BC847B
TR50p ZTX690B
TR1p BC547B
TR71 BC857B
TR25 BC847B
IC6p SDA 5273 TELETEXT PROCESSOR
HOR SYNC
VERT SYNC
TEXT CVBS
CAS
RAS
READ/WRITE
D0 D1 D2 D3
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9
I²C EN
VREF
FAST BLANK
R G B
RESET
X3p 20.5 MHz
IC5 HYB 514256 DRAM 262144X4
IC5 IS ONLY MOUNTED IN SPECIAL TYPES
OE
B48 B45 B46 B47
TR30 BC847B
TR49 BF840
TR48 BF840
TR32 BC847B
TR31 BC847B
TR15 BC847B
TR17 BC847B
TR35 BC857B
TR18 BC847B
TR23 BC847B
TR24 BC847B
TR37 BC857B
TR27 BC847B
TR14p BC547B
TR29 BC847B
TR16p BC547B
TR28 BC847B
TR13 BC847B
TR12 BC847B
TR34 BC857B
TR33 BC857B
TR4 BC547B
ADAPTIVE LUMINANCE PEAKING
NOISE REDUCTION
⑲ 20µs/div 0.5V/div
⑳ 20µs/div 1V/div
㉑ 20µs/div 1V/div
㉒ 20µs/div 0.5V/div
㉓ 20µs/div 1V/div
0V DC
YDL
SANDCASTLE
B52 513
B53
Y

DIAGRAM D CURTAIN CONTROL & FORMAT OPTIMIZE


2 CURTAIN CONTROL
p = COMPONENT PLACED ON PRIMARY SIDE
4 | FORMAT OPTIMIZE
VERT SYNC SEP
B62
P52-29
CVBS TXT
B63
P52-1
B61
P52-3
8VTV
B64
P52-9
SAND-CASTLE
B66
P52-5
SCL I
B65
P52-7
SDA I
B57
HA
B56
ABC
8VTV
12VM
5VTV
R8p 2K2
C15p 220n
C2p 220p
L1p 8µ2
TR8p BC847B
TR9 BC847B
TR15 BC857B
R57 180K
R1 680
R56 180K
R9 2K2
R10 2K7
D8
C1 47p
R5 1K8
R3 1K
R13 3K9
C5 1n
C10 47n
R58 470K
1/4 IC3p LM339M
C12p 100n
R53p 100K
C6p 2n7
1/4 IC3p LM339M
R23p 6K8
R11p 3K9
R21p 5K6
R22p 5K6
TR7p BC847B
R55p 180K
R36p 10K
R34p 15K
C17p 10µ
R39 1K8
D10p
R33p 10K
TR14p BC857B
R4p 7K15
R51p 62K
R48p 56K2
D7p
R45p 22K
R6p 2K2
R62p 82K
R42p 1K8
R50p 56K2
C8p 10n
1/4 IC3p LM339M
C7p 3n3
1/4 IC3p LM339M
R7p 2K2
TR6p BC847B
R19p 5K6
TR5p BC847B
R20p 5K6
R2 680
C16 220n
C3 470p
R54 100K
R59 470K
TR16 BC857B
R38 10K
R47 22K
C4 1n
C11 47n
R37 10K
R60 1M
TR12 BC847B
R49 47K
C20 47n
R62 100K
C9 4n7
R61 100K
R46 22K
TR11 BC847B
R12 3K9
R35 10K
TR10 BC847B
C14 100n
IC2p PCF8574
I/O PORTS
I²C BUS CONTROL
SCL I
SDA I
D6
R31 10K
D3
R29 10K
TR2 BC847B
R14 10K
C18p 47µ
D1p
D2p
R17p 5K6
R30p 10K
TR1p BC847B
C13 100n
IC1 4020B
CLP
MR
12-STAGE COUNTER
R28 10K
R43p 22K
D9
D4
D5
TR4 BC847B
R27 10K
R26 10K
R25 10K
R24 10K
R40 10K
R16 4K7
R18 5K6
R32 10K
TR3 BC847B
R41 10K
R44 22K
TR13 BC847B
R15 4K7
C19p 47µ
20µs/div 2V/div
㉔
㉕
㉖
㉗
㉘
0V DC
R194 4K7
TR63 BC847B
R210 1K8
R213 47K
R255 10K
C140 1n
R252 1K
D52
R167 4K7
TR10 BF840
C112 220p
D51
D50
R272 56K
1/4 IC10 LM 339M
R86 1K
C61 470p
R257 22K
R166 4K7
R258 22K
R34 1K2
D5
R181 1K5
R208 5K6
TR2 BC847B
R118 27K4
R265 47K
R262 47K
C119 100n
1/2 IC8 LF 353
C85p 1n
R250 22K
R246 4K7
1/4 IC10 LM 339M
R218 10K
R259 100K
R29 470
R35 1K
C118p 22µ
1/4 IC10 LM 339M
C121 100n
TR69 BC847B
R14 10K
R360 470
TR11 BC847B
C12 220n
R304 27K4
D32
R301 330K
1/2 IC8 LF 353
R204 10K
TR7 BC847B
R312 680K
R296 150K
R230 10K
TR6 BC847B
CURTAIN ON/OFF
CURTAIN 1/16
CURTAIN 2/16
PICTURE MUTE
SER/PAR REG
IC11 4094B
OE
DATA
CLP
STROBE
C91 100n
R290 10
C141p 100µ
R303 100K
R306 100K
FILTER ON/OFF
CSD DATA
CSD CLP
VIDEO STROBE
12V
C119
C120
C118
B58
B59
B60

	IC2	
PIN	4	5
FORMAT 1	H	H
FORMAT 2	L	L
FORMAT 3	H	L
FORMAT 4	L	H

DIAGRAM E VIDEO OUTPUT


3 VIDEO OUTPUT
s = COMPONENT PLACED ON THE SECONDARY SIDE
N126 P38-1 190V
B67 P37-3 11V
B68 P37-4 R DRIVE
B69 P37-2 G DRIVE
B70 P37-5 B DRIVE
B72 P37-7 RGB FEEDBACK
B73 P37-8 SVM GROUND
B74 P37-6 SVM DRIVE
N130 P38-4 -45V
R18 47
L1 270µ
C4 100n
D1
R1 8K2
R2 8K2
R3 8K2
C6 4µ7
C7 220n
R24 3K9
R25 10K
TR6 BF871
TR5 BF871
TR4 BF871
TR1 BF421
TR2 BF421
TR3 BF421
C1 33p
C2 33p
C3 33p
R30 3K3
R31 3K3
R29 3K3
R12 2K2
R11 2K2
R10 2K2
R4 560
R5 560
R6 560
R7 3K3
R8 3K3
R9 3K3
86.5V
93.7V
99.7V
R
G
B
20µs/div 50V/div
0V DC
(29)
(30)
(31)
G2
P38-7
FOCUS
C5 2n2
EHT
N132
N133
N134
P40-1 SVM+
SVM COIL
P40-3 SVM-
P70-1
P70-2
N129
P38-3 AQUADAG
R19 1K2
R75 47K
R32 100K
C62 10µ
P37-1 B71
P38-2 N127
FILAMENT
P38-5
N131
R52s 10K
R55s 100
TR51 BC547B
R70s 1K
D57s
C51 100n
C52 100n
D51s
D52s
R53s 470
R57s 120
R58s 120
D58s
C63s 220n
R56s 100
TR52 BC557B
R54s 10K
R69s 1K
R76 47
C61 100µ
SCAN VELOCITY MODULATION (SVM)
R72s 180
C55 1µ
D53
R73s 28
C59 100µ
TR56s BC857B
R63s 3R3
D54s
TR53 BD830
C53s 100n
C54s 100n
R60s 10K
R59s 1K
R61s 10K
R62s 1K
D55s
TR55s BC847B
TR54 BD829
R68 220
C57 100n
R71s 180
C56 1µ
D56s
R65s 3R3
R74s 28
C60 100µ

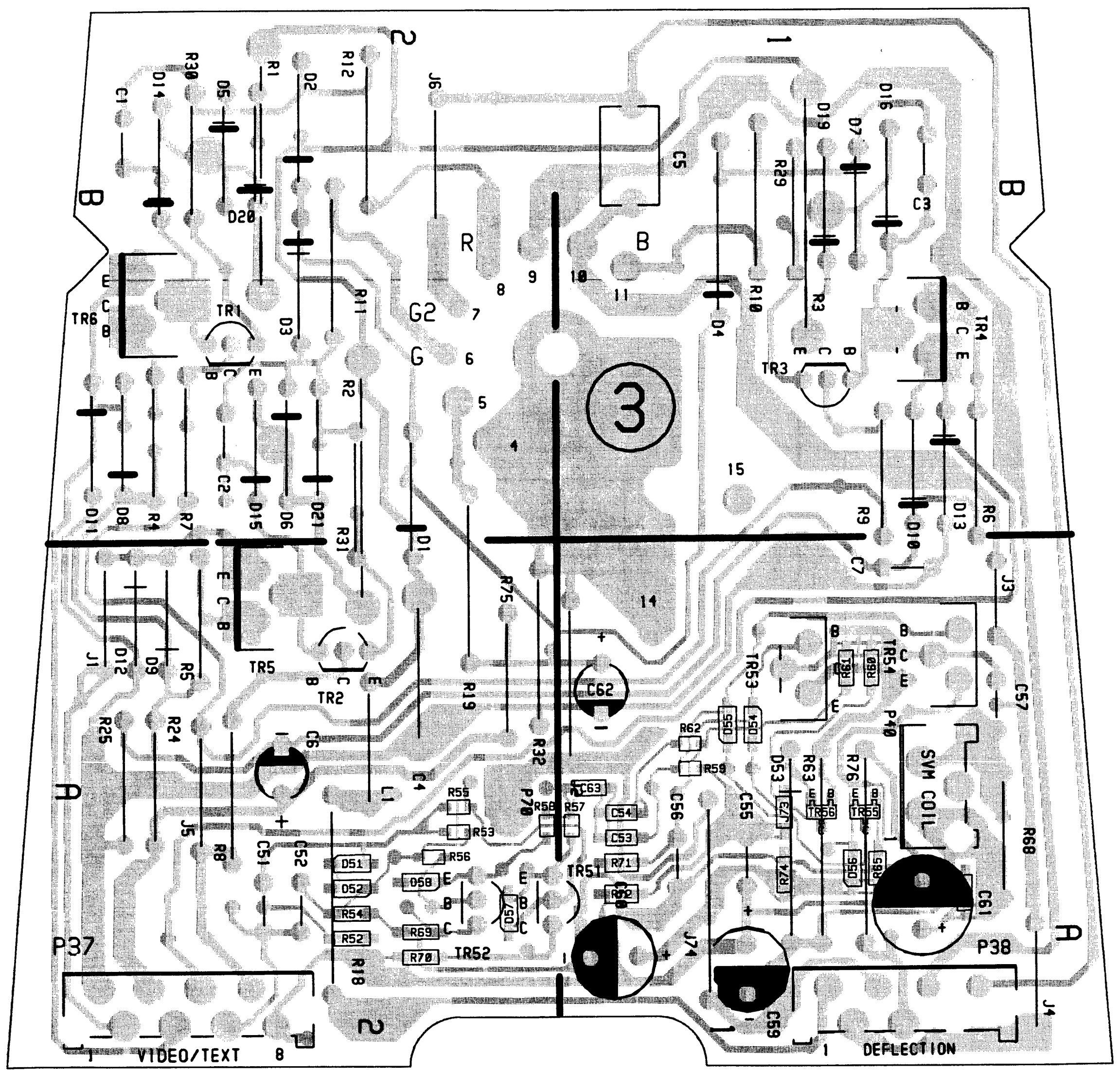
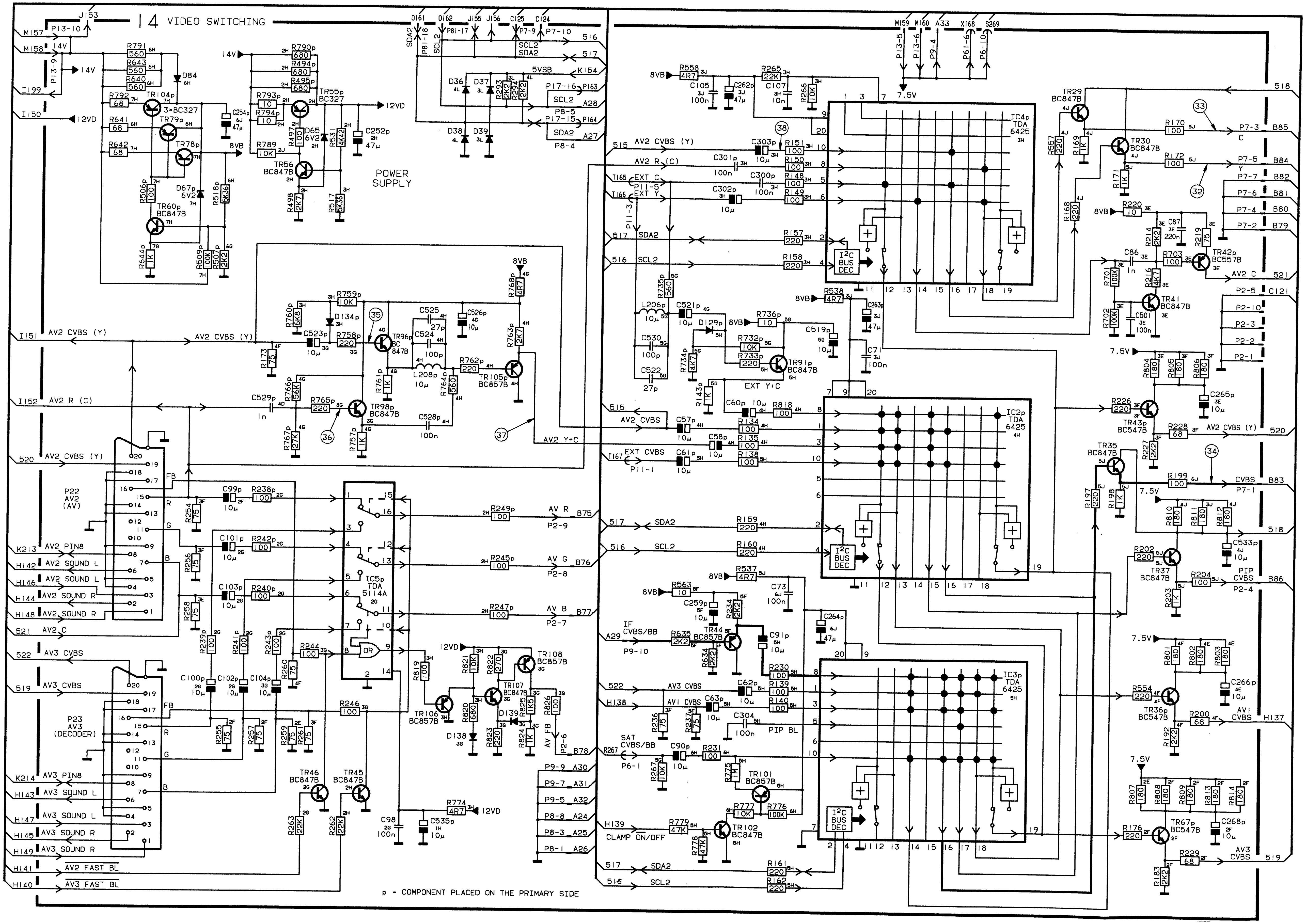
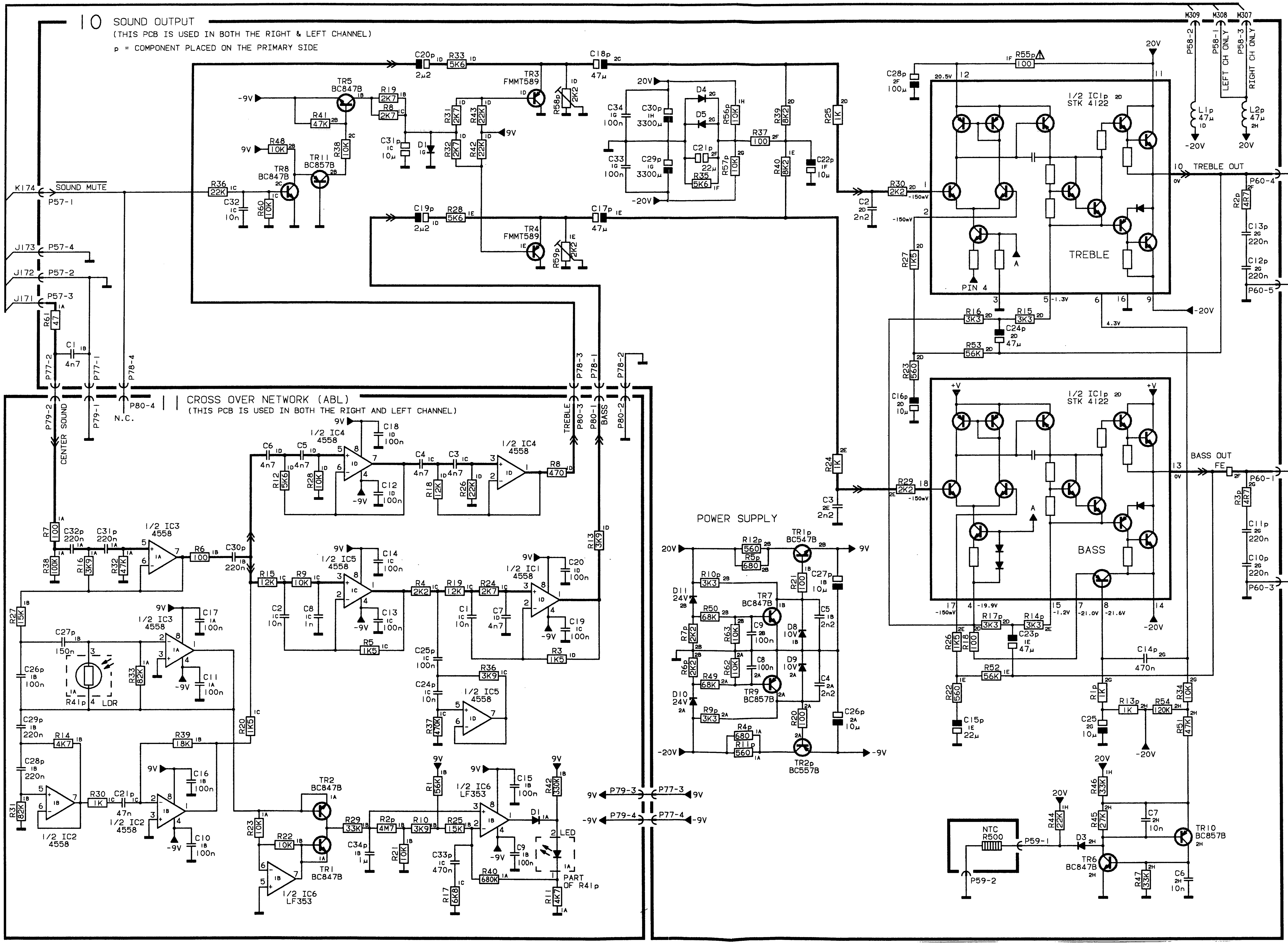

3
VIDEO/TEXT
DEFLECTION
P37
P38
SVM COIL
TR1
TR2
TR3
TR4
TR5
TR6
TR51
TR52
TR53
TR54
C61
C62
C59
C6
G2
R
G
B
A

DIAGRAM F VIDEO SWITCHING **PCB drawings for PCB14 see page 2-25 and 2-26** **Oscilloscope pictures for diagram F see page 2-5**

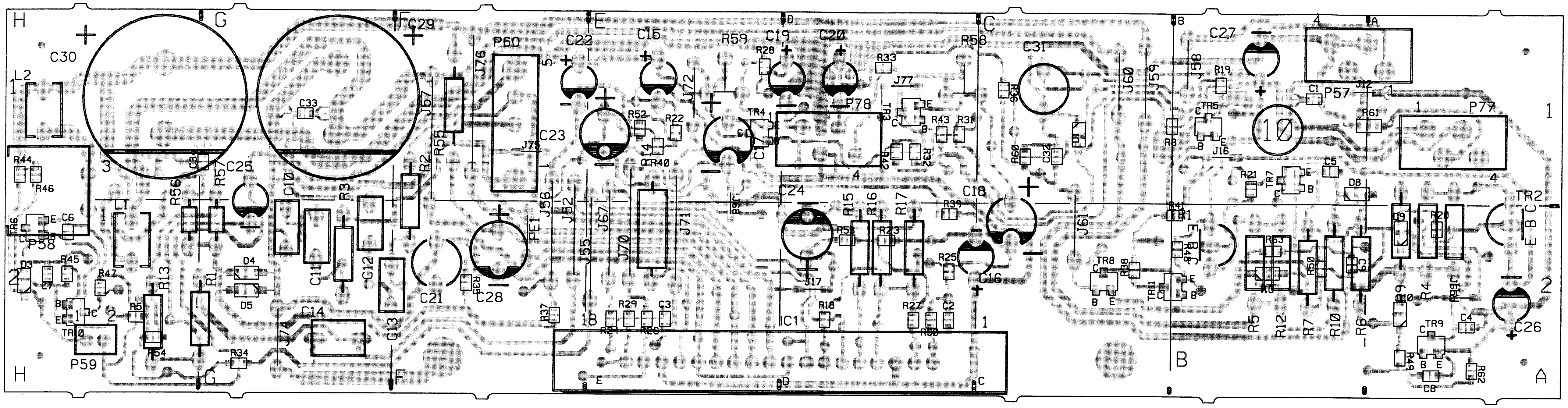

14 VIDEO SWITCHING
J153
M157
M158
P13-10
P13-9
14V
12VD
8VB
I199
I150
I151
I152
R791 560
R643 560
R640 560
R792 68
R641 68
R642 68
TR104p
TR79p
TR78p
3×BC327
D84
D67p 6V2
TR60p BC847B
R506p 100
R518p 5K36
R644p 1K
R509p 100K
R507p 2K2
C254p 47μ
R790p 680
R494p 680
R495p 680
TR55p BC327
R793p 10
R794p 10
R789 10K
R497 100
D65 6V2
R511 4K42
C252p 47μ
TR56 BC847B
R498 2K7
R517 5K36
POWER SUPPLY
D161
D162
J155
J156
C125
C124
SDA2
SCL2
P81-18
P81-17
P7-9
P7-10
5VSB
K154
D36
D37
D38
D39
R293 2K2
R294 2K2
P17-16
P163
P17-15
P164
P8-5
P8-4
A28
A27
516
517
AV2 CVBS (Y)
AV2 R (C)
R759p 10K
D134p
R760p 6K8
C523p 10μ
R758p 220
TR96p BC847B
C525 27p
C526p 10μ
C524 100p
L208p 10μ
R762p 220
R763p 2K7
R768p 4K7
TR105p BC857B
R761p 1K
R764p 560
R766p 56K
C529p 1n
R765p 220
TR98p BC847B
C528p 100n
R767p 27K
R757p 1K
R173 75
AV2 Y+C
P22 AV2 (AV)
P23 AV3 (DECODER)
FB
R
G
B
520
AV2 CVBS (Y)
K213 AV2 PIN8
H142 AV2 SOUND L
H146 AV2 SOUND L
H144 AV2 SOUND R
H148 AV2 SOUND R
521 AV2 C
522 AV3 CVBS
519 AV3 CVBS
K214 AV3 PIN8
H143 AV3 SOUND L
H147 AV3 SOUND L
H145 AV3 SOUND R
H149 AV3 SOUND R
H141 AV2 FAST BL
H140 AV3 FAST BL
C99p 10μ
R238p 100
C101p 10μ
R242p 100
C103p 10μ
R240p 100
R254 75
R256 75
R258 75
R239p 100
R241 100
R243p 100
R244 100
R260 75
C100p 10μ
C102p 10μ
C104p 10μ
R255 75
R257 75
R259 75
R261 75
R246 100
IC5p TDA 5114A
OR
R249p 100
R245p 100
R247p 100
AV R B75 P2-9
AV G B76 P2-8
AV B B77 P2-7
R819 100
R821 10K
R822 270
TR108 BC857B
TR107 BC847B
TR106 BC857B
R820 680
D138
D139
R823 220
R824 1K
R825 1K5
R826 100
AV FB P2-6 B78
R774 4R7
C98 100n
C535p 10μ
TR46 BC847B
TR45 BC847B
R263 22K
R262 22K
P9-9 A30
P9-7 A31
P9-5 A32
P8-8 A24
P8-3 A25
P8-1 A26
M159 M160 A33 X168 S269
P13-5
P13-6
P9-4
P61-6
P6-10
7.5V
R558 4R7
C105 100n
C262p 47μ
R265 22K
C107 10n
R266 10K
515 AV2 CVBS (Y)
AV2 R (C)
T165 EXT C
T166 EXT Y
P11-5
P11-3
C303p 10μ
C301p 100n
C300p 100n
C302p 10μ
R151 100
R150 100
R148 100
R149 100
R157 220
R158 220
SDA2
SCL2
I²C BUS DEC
IC4p TDA 6425
L206p 10μ
C521p 10μ
R735p 560
C530 100p
C522 27p
D129p
R736p 10
R732p 1K
R733p 220
TR91p BC847B
C519p 10μ
R734p 4K7
R538 4R7
C263 47μ
C71 100n
EXT Y+C
R143p 1K
C60p 10μ
R818 100
C57p 10μ
R134 100
C58p 10μ
R135 100
R136 100
C61p 10μ
R138 100
T167 EXT CVBS
P11-1
IC2p TDA 6425
R159 220
R160 220
R537 4R7
R563 10
C259p 10μ
R234 2K2
C73 100n
C264p 47μ
IF CVBS/BB
A29 P9-10
R635 2K2
TR44 BC857B
R634 2K2
C91p 10μ
R230 100
R139 100
R140 100
C62p 10μ
C63p 10μ
C304 100n
PIP BL
AV3 CVBS
AV1 CVBS
H138
R236 75
R237 75
SAT CVBS/BB
R267 P6-1
C90p 10μ
R231 100
R267 10K
R775 1M
TR101 BC857B
R777 10K
R776 100K
H139 CLAMP ON/OFF
R779 47K
R778 47K
TR102 BC847B
R161 220
R162 220
IC3p TDA 6425
TR29 BC847B
R557 220
R169 1K
TR30 BC847B
R170 100
R172 100
R171 1K
P7-3 B85 C
P7-5 B84 Y
P7-7 B82
P7-6 B81
P7-4 B80
P7-2 B79
R168 220
R220 10
C87 220n
R214 2K2
R219 75
C86 1n
R703 100
TR42p BC557B
AV2 C 521
R701 100K
R216 4K7
TR41 BC847B
R702 100K
C501 100n
P2-5 C121
P2-10
P2-3
P2-2
P2-1
R804 180
R805 180
R806 180
R226 220
TR43p BC547B
C265p 10μ
R228 68
AV2 CVBS (Y) 520
R227 2K2
TR35 BC847B
R199 100
CVBS B83 P7-1
R197 220
R198 1K
R810 180
R811 180
R812 180
C533p 10μ
518
R202 220
TR37 BC847B
R204 100
PIP CVBS B86 P2-4
R203 1K
R801 180
R802 180
R803 180
C266p 10μ
R554 220
TR36p BC547B
R200 68
AV1 CVBS H137
R192 2K2
R807 180
R808 180
R809 180
R813 180
R814 180
R176 220
TR67p BC547B
C268p 10μ
R229 68
AV3 CVBS 519
R183 2K2
32
33
34
35
36
37
38

p = COMPONENT PLACED ON THE PRIMARY SIDE

DIAGRAM G SOUND OUTPUT & ABL


10 SOUND OUTPUT
(THIS PCB IS USED IN BOTH THE RIGHT & LEFT CHANNEL)
p = COMPONENT PLACED ON THE PRIMARY SIDE
11 CROSS OVER NETWORK (ABL)
(THIS PCB IS USED IN BOTH THE RIGHT AND LEFT CHANNEL)
POWER SUPPLY
SOUND MUTE
K174
P57-1
J173
P57-4
J172
P57-2
J171
P57-3
CENTER SOUND
N.C.
TREBLE
BASS
TREBLE OUT
BASS OUT
TREBLE
BASS
1/2 IC1p STK 4122
PIN 4
LEFT CH ONLY
RIGHT CH ONLY
M309
M308
M307
P58-2
P58-1
P58-3
L1p 47µ
L2p 47µ
P60-4
P60-5
P60-1
P60-3
TR5 BC847B
TR8 BC847B
TR11 BC857B
TR3 FMMT589
TR4 FMMT589
1/2 IC3 4558
1/2 IC4 4558
1/2 IC5 4558
1/2 IC1 4558
1/2 IC2 4558
1/2 IC6 LF353
TR1 BC847B
TR2 BC847B
TR1p BC547B
TR2p BC557B
TR7 BC847B
TR9 BC857B
TR6 BC847B
TR10 BC857B
NTC R500
P59-1
P59-2
R41p LDR
LED
PART OF R41p
9V
-9V
20V
-20V
P79-3
P77-3
P79-4
P77-4
P78-3
P78-1
P78-2
P78-4
P77-1
P77-2
P79-1
P79-2
P80-1
P80-2
P80-3
P80-4

PCB 10


H
G
F
E
D
C
B
A
C30
L2
C29
P60
C22
C15
R59
C19
C20
R58
C31
C27
P57
P77
P78
C23
C25
C24
C18
C16
C21
C28
C14
C26
R44
R46
P58
TR6
TR0
P59
IC1
TR2
TR4
TR5
TR7
TR8
TR9
TR11
10
1
4
18

PCB 11

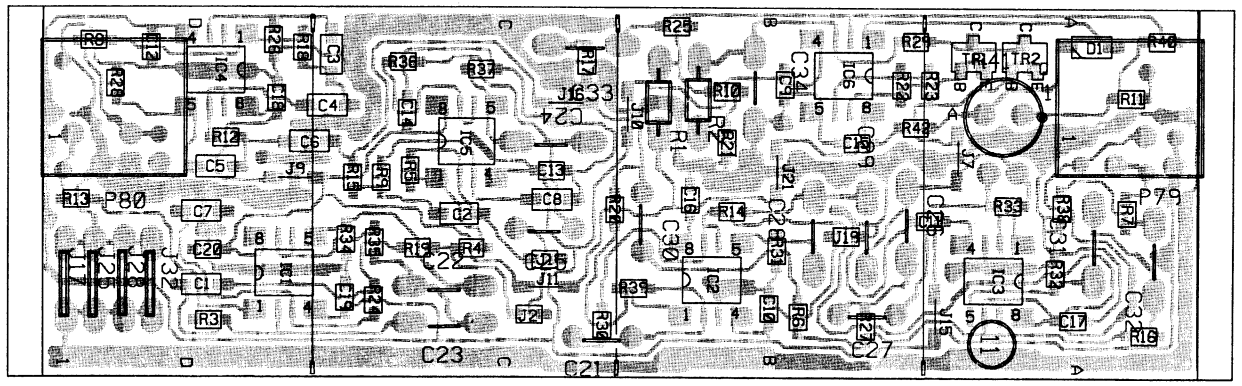

P80
P79
C23
C21
IC1
IC2
IC3
IC4
IC5
IC6
TR4
TR2
11
A
B
C
D

DIAGRAM H SOUND SWITCHING PCB drawings for PCB14 see page 2-25 and 2-26

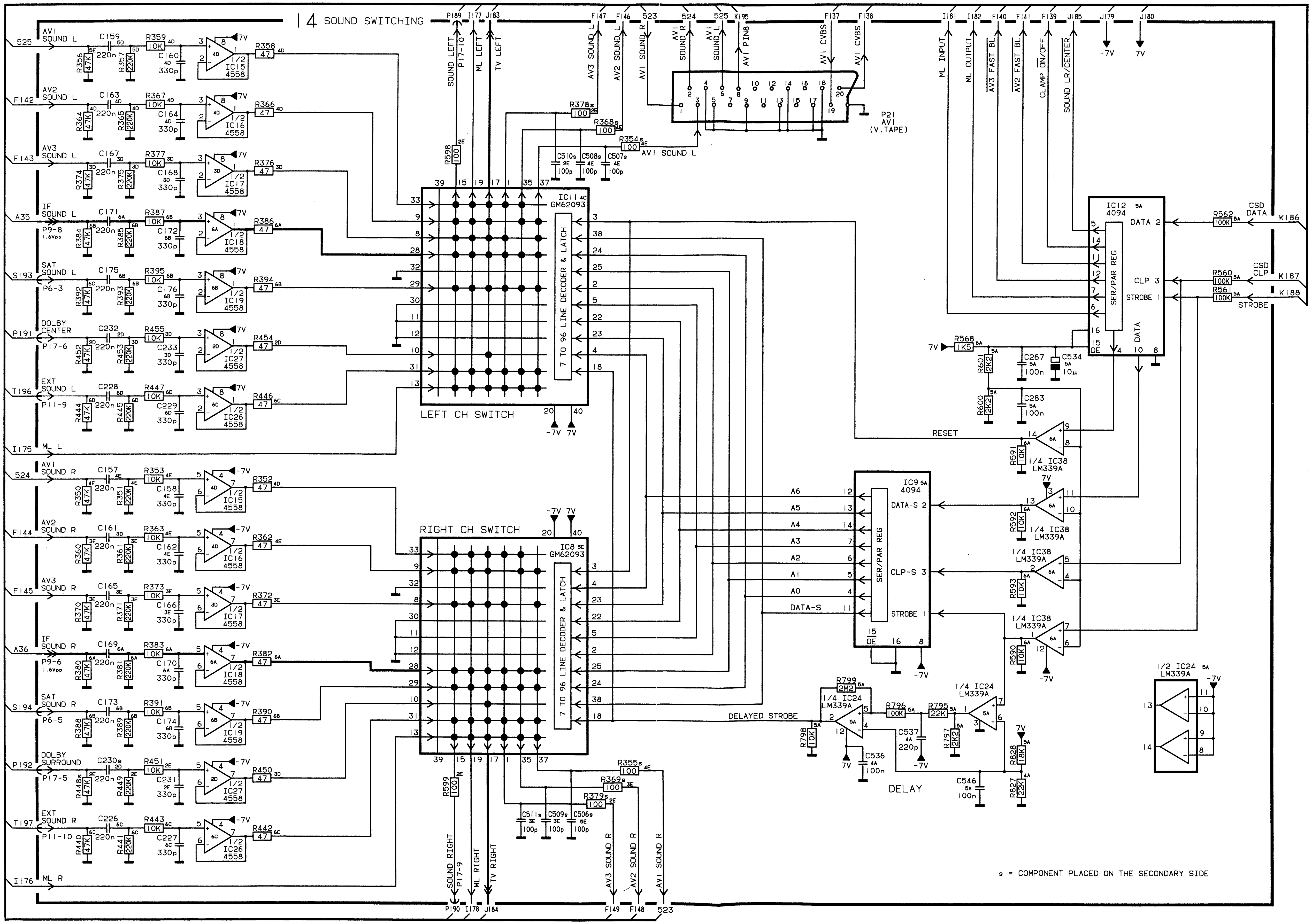
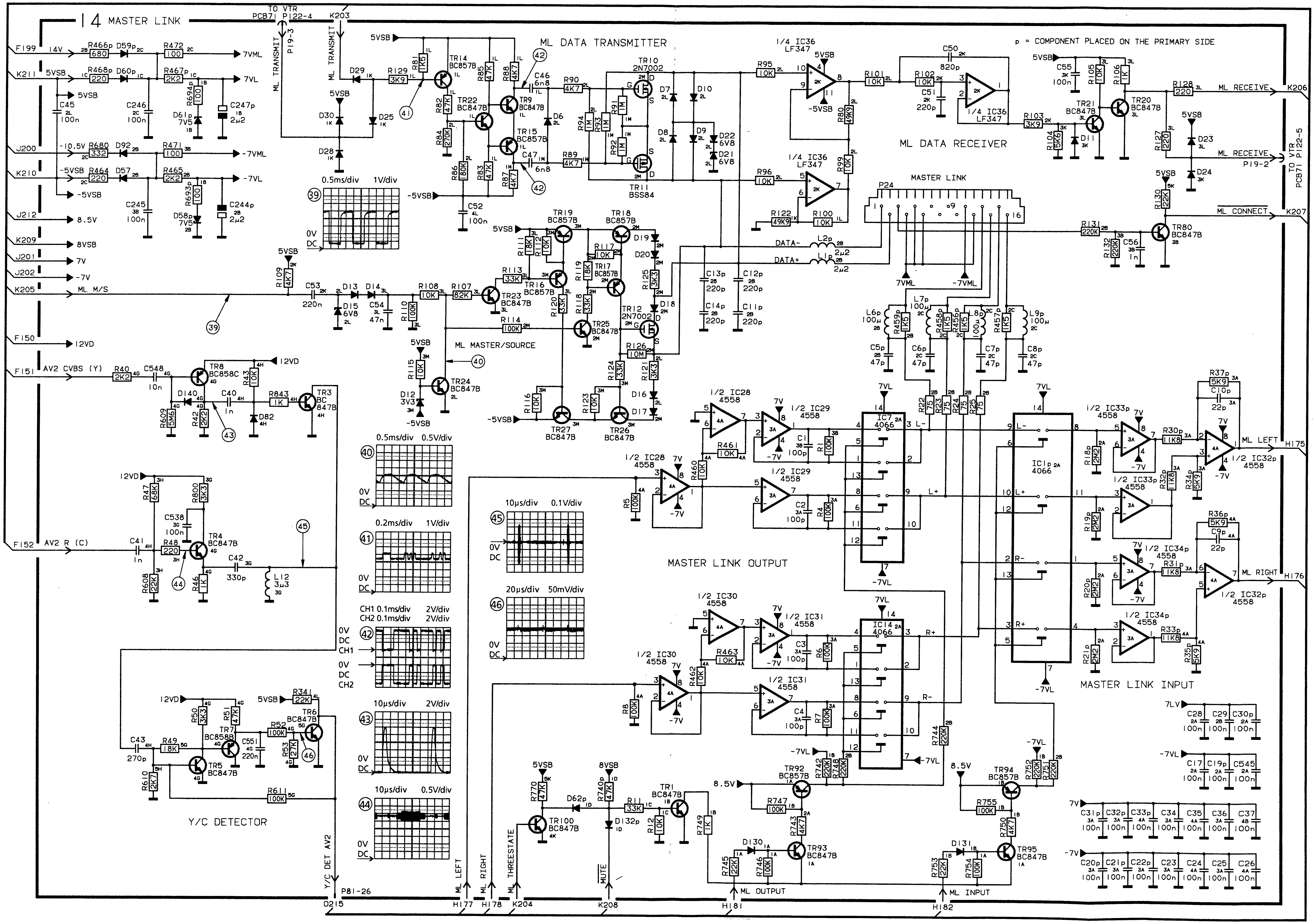
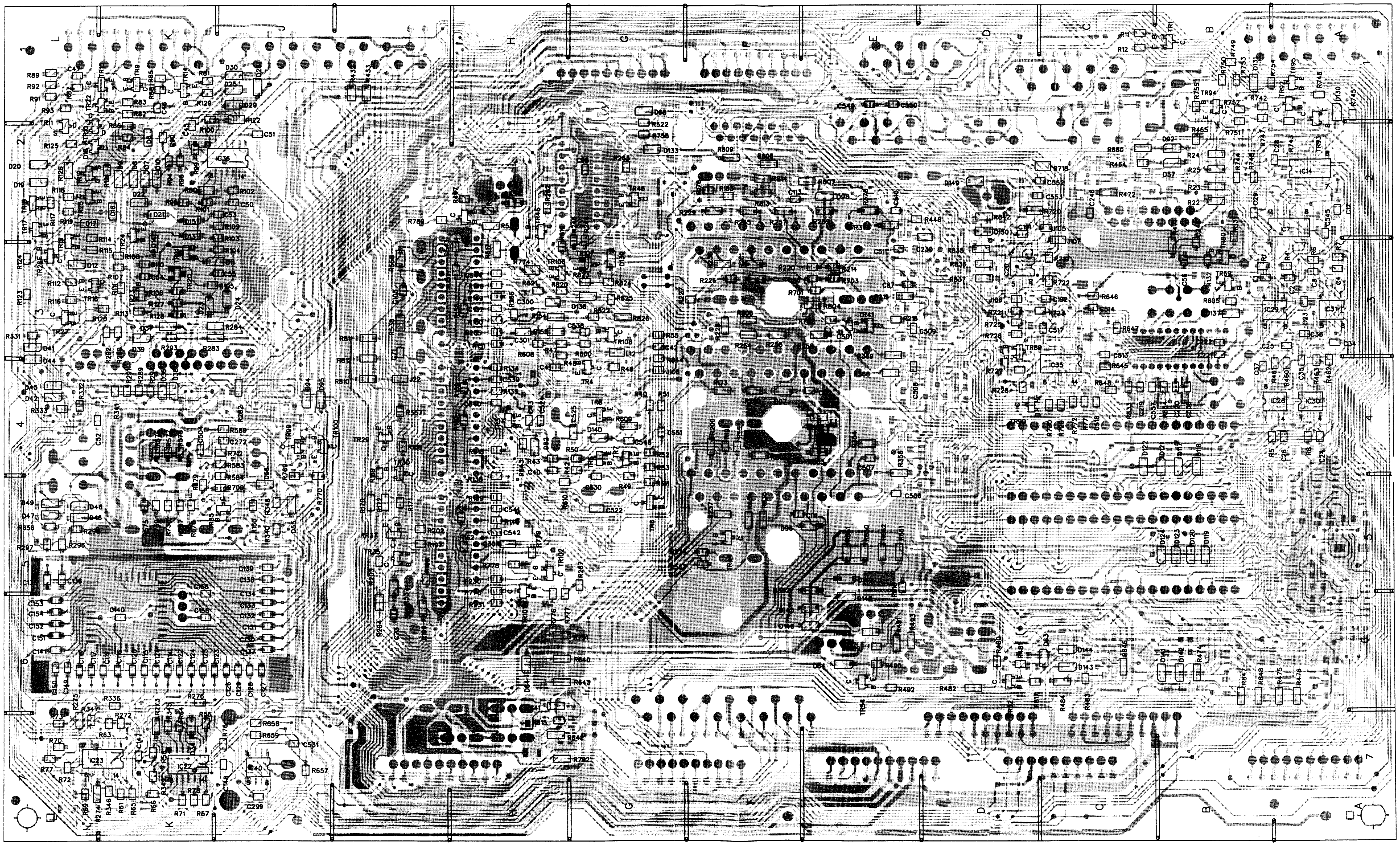

14 SOUND SWITCHING
525 AV1 SOUND L
F142 AV2 SOUND L
F143 AV3 SOUND L
A35 IF SOUND L P9-8 1.6Vpp
S193 SAT SOUND L P6-3
P191 DOLBY CENTER P17-6
T196 EXT SOUND L P11-9
I175 ML L
524 AV1 SOUND R
F144 AV2 SOUND R
F145 AV3 SOUND R
A36 IF SOUND R P9-6 1.6Vpp
S194 SAT SOUND R P6-5
P192 DOLBY SURROUND P17-5
T197 EXT SOUND R P11-10
I176 ML R
C159 220n R356 47K R357 220K R359 10K C160 330p 1/2 IC15 4558 R358 47
C163 220n R364 47K R365 220K R367 10K C164 330p 1/2 IC16 4558 R366 47
C167 220n R374 47K R375 220K R377 10K C168 330p 1/2 IC17 4558 R376 47
C171 220n R384 47K R385 220K R387 10K C172 330p 1/2 IC18 4558 R386 47
C175 220n R392 47K R393 220K R395 10K C176 330p 1/2 IC19 4558 R394 47
C232 220n R452 47K R453 220K R455 10K C233 330p 1/2 IC27 4558 R454 47
C228 220n R444 47K R445 220K R447 10K C229 330p 1/2 IC26 4558 R446 47
C157 220n R350 47K R351 220K R353 10K C158 330p 1/2 IC15 4558 R352 47
C161 220n R360 47K R361 220K R363 10K C162 330p 1/2 IC16 4558 R362 47
C165 220n R370 47K R371 220K R373 10K C166 330p 1/2 IC17 4558 R372 47
C169 220n R380 47K R381 220K R383 10K C170 330p 1/2 IC18 4558 R382 47
C173 220n R388 47K R389 220K R391 10K C174 330p 1/2 IC19 4558 R390 47
C230s 220n R448s 47K R449 220K R451 10K C231 330p 1/2 IC27 4558 R450 47
C226 220n R440 47K R441 220K R443 10K C227 330p 1/2 IC26 4558 R442 47
7V
-7V
P189 I177 J183
SOUND LEFT P17-10
ML LEFT
TV LEFT
F147 F146 523
AV3 SOUND L
AV2 SOUND L
AV1 SOUND R
524 525 K195
AV1 SOUND R
AV1 SOUND L
AV1 PIN8
F137 F138
AV1 CVBS
AV1 CVBS
P21 AV1 (V.TAPE)
R598 100
R378s 100
R368s 100
R354s 100
AV1 SOUND L
C510s 100p C508s 100p C507s 100p
IC11 GM62093
7 TO 96 LINE DECODER & LATCH
LEFT CH SWITCH
RIGHT CH SWITCH
IC8 GM62093
-7V 7V
I181 I182 F140 F141 F139 J185 J179 J180
ML INPUT
ML OUTPUT
AV3 FAST BL
AV2 FAST BL
CLAMP ON/OFF
SOUND LR/CENTER
-7V 7V
IC12 4094
SER/PAR REG
DATA 2
CLP 3
STROBE 1
DATA
OE
R562 100K CSD DATA K186
R560 100K CSD CLP K187
R561 100K STROBE K188
7V R568 1K5
R601 2K2 C267 100n C534 10µ
R600 2K2 C283 100n
RESET
R591 10K 1/4 IC38 LM339A
R592 10K 1/4 IC38 LM339A
R593 10K 1/4 IC38 LM339A
R590 10K 1/4 IC38 LM339A
IC9 4094
SER/PAR REG
DATA-S 2
CLP-S 3
STROBE 1
A6 A5 A4 A3 A2 A1 A0 DATA-S
DELAYED STROBE
R799 2M2
1/4 IC24 LM339A
R798 10K
C536 100n
R796 100K
R795 22K
1/4 IC24 LM339A
R797 2K2
C537 220p
-7V
DELAY
C546 100n
R828 18K
R827 22K
1/2 IC24 LM339A
R599 100
R355s 100
R369s 100
R379s 100
C511s 100p C509s 100p C506s 100p
SOUND RIGHT P17-9
ML RIGHT
TV RIGHT
AV3 SOUND R
AV2 SOUND R
AV1 SOUND R
P190 I178 J184
F149 F148 523
s = COMPONENT PLACED ON THE SECONDARY SIDE

DIAGRAM I MASTER LINK PCB drawings for PCB14 see page 2-25 and 2-26


14 MASTER LINK
TO VTR PCB71 P122-4
K203
ML TRANSMIT
P19-3
ML DATA TRANSMITTER
p = COMPONENT PLACED ON THE PRIMARY SIDE
F199 14V
R466p 680
D59p
R472 100
7VML
K211 5VSB
R468p 220
D60p
R467p 2K2
7VL
5VSB
C45 100n
C246 100n
R694p 100
C247p 2µ2
D61p 7V5
J200 -10.5V
R680 332
D92
R471 100
-7VML
K210 -5VSB
R464 220
D57
R465 2K2
-7VL
-5VSB
R693p 100
C244p 2µ2
C245 100n
D58p 7V5
J212 8.5V
K209 8VSB
J201 7V
J202 -7V
K205 ML M/S
F150 12VD
F151 AV2 CVBS (Y)
F152 AV2 R (C)
5VSB
D29
R129 3K9
R81 1K5
TR14 BC857B
R85 47K
R88 4K7
C46 6n8
R90 4K7
TR10 2N7002
D7
D10
TR22 BC847B
TR9 BC847B
R82 47K
D6
R94 1M
R93 1M
R91 1M
R92 1M
D8
D9
D22 6V8
D21 6V8
TR15 BC857B
C47 6n8
R89 4K7
TR11 BSS84
R84 270K
R86 180K
R83 47K
R87 4K7
C52 100n
-5VSB
D30
D25
D28
0.5ms/div 1V/div
0V DC
TR19 BC857B
TR18 BC857B
R111 18K
R112 10K
R117 10K
D19
D20
R113 33K
TR16 BC857B
R119 18K
TR17 BC857B
R125 3K3
R109 4K7
C53 220n
D13
D14
R108 10K
R107 82K
TR23 BC847B
R120 33K
R118 33K
D15 6V8
C54 47n
R110 100K
R114 100K
TR25 BC847B
TR12 2N7002
D18
ML MASTER/SOURCE
R126 10M
R115 10K
TR24 BC847B
R124 33K
R121 3K3
D12 3V3
-5VSB
R116 10K
TR27 BC847B
R123 10K
TR26 BC847B
D16
D17
1/4 IC36 LF347
5VSB
R95 10K
C50 820p
R101 10K
R102 10K
C51 220p
1/4 IC36 LF347
R80 49K9
-5VSB
ML DATA RECEIVER
1/4 IC36 LF347
R96 10K
R99 10K
R122 49K9
R100 10K
MASTER LINK
P24
DATA-
DATA+
L2p 2µ2
L1p 2µ2
C13p 220p
C12p 220p
C14p 220p
C11p 220p
7VML
-7VML
L6p 100µ
R459p 1K5
L7p 100µ
R458p 1K5
R456p 1K5
L8p 100µ
R457p 1K5
L9p 100µ
C5p 47p
C6p 47p
C7p 47p
C8p 47p
5VSB
C55 100n
R105 10K
R106 1K
TR21 BC847B
TR20 BC847B
R103 3K9
R104 5K6
D11
R128 220
ML RECEIVE
K206
5VSB
D23
R127 220
ML RECEIVE
P19-2
TO VTR PCB71 P122-5
5VSB
D24
R130 22K
ML CONNECT
K207
R131 220K
R132 220K
C56 1n
TR80 BC847B
R40 2K2
C548 10n
TR8 BC858C
R43 10K
12VD
D140
C40 1n
R843 1K
TR3 BC847B
R609 5M6
R42 2K2
D82
12VD
R47 68K
R800 3K3
C538 100n
TR4 BC847B
C41 1n
R48 220
C42 330p
L12 3µ3
R608 22K
R46 1K
12VD
R50 3K3
R51 47K
5VSB
R341 22K
TR6 BC847B
TR7 BC858B
R52 100K
C551 220n
R53 27K
C43 270p
R49 18K
TR5 BC847B
R610 2K7
R611 100K
Y/C DETECTOR
Y/C DET AV2
P81-26
0215
0.5ms/div 0.5V/div
0V DC
0.2ms/div 1V/div
0V DC
CH1 0.1ms/div 2V/div
CH2 0.1ms/div 2V/div
0V DC CH1
0V DC CH2
10µs/div 2V/div
0V DC
10µs/div 0.5V/div
0V DC
10µs/div 0.1V/div
0V DC
20µs/div 50mV/div
0V DC
1/2 IC28 4558
1/2 IC29 4558
R461 10K
C1 100p
R1 100K
1/2 IC28 4558
R460 10K
R5 100K
1/2 IC29 4558
C2 100p
R4 100K
IC7 4066
L-
L+
MASTER LINK OUTPUT
1/2 IC30 4558
1/2 IC31 4558
R463 10K
C3 100p
R6 100K
1/2 IC30 4558
R462 10K
R8 100K
1/2 IC31 4558
C4 100p
R7 100K
IC14 4066
R+
R-
R22 75
R23 75
R24 75
R25 75
IC1p 4066
MASTER LINK INPUT
1/2 IC33p 4558
R18p 2M2
R30p 1K8
R37p 5K9
C10p 22p
1/2 IC32p 4558
ML LEFT
H175
1/2 IC33p 4558
R19p 2M2
R32p 1K8
R34p 5K9
R36p 5K9
C9p 22p
1/2 IC34p 4558
R20p 2M2
R31p 1K8
ML RIGHT
H176
1/2 IC32p 4558
1/2 IC34p 4558
R21p 2M2
R33p 1K8
R35p 5K9
7VL
-7VL
C28 100n
C29 100n
C30p 100n
C17 100n
C19p 100n
C545 100n
C31p 100n
C32p 100n
C33p 100n
C34 100n
C35 100n
C36 100n
C37 100n
C20p 100n
C21p 100n
C22p 100n
C23 100n
C24 100n
C25 100n
C26 100n
ML LEFT
H177
ML RIGHT
H178
ML THREESTATE
K204
5VSB
R770 47K
TR100 BC847B
8VSB
D62p
R740p 47K
D132p
R11 33K
TR1 BC847B
R12 10K
MUTE
K208
R749 1K
8.5V
TR92 BC857B
R747 100K
R742 220K
R748 220K
R743 4K7
D130
R745 22K
R746 100K
TR93 BC847B
ML OUTPUT
H181
R744 220K
8.5V
TR94 BC857B
R752 220K
R751 220K
R755 100K
R750 4K7
D131
R753 22K
R754 100K
TR95 BC847B
ML INPUT
H182

PCB 14



PCB 14

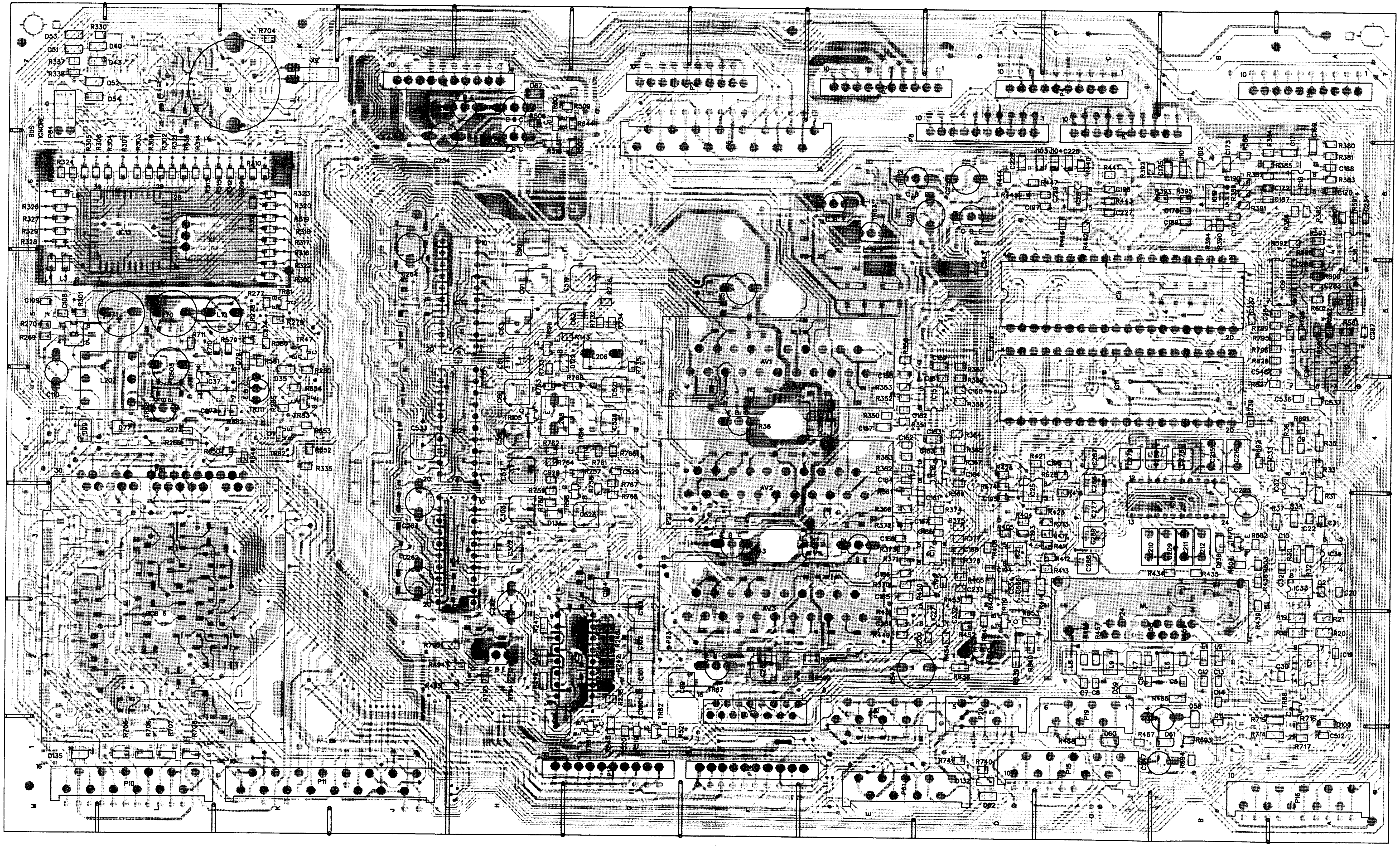


DIAGRAM J SOUND CONTROL **PCB drawings for PCB14 see page 2-25 and 2-26**

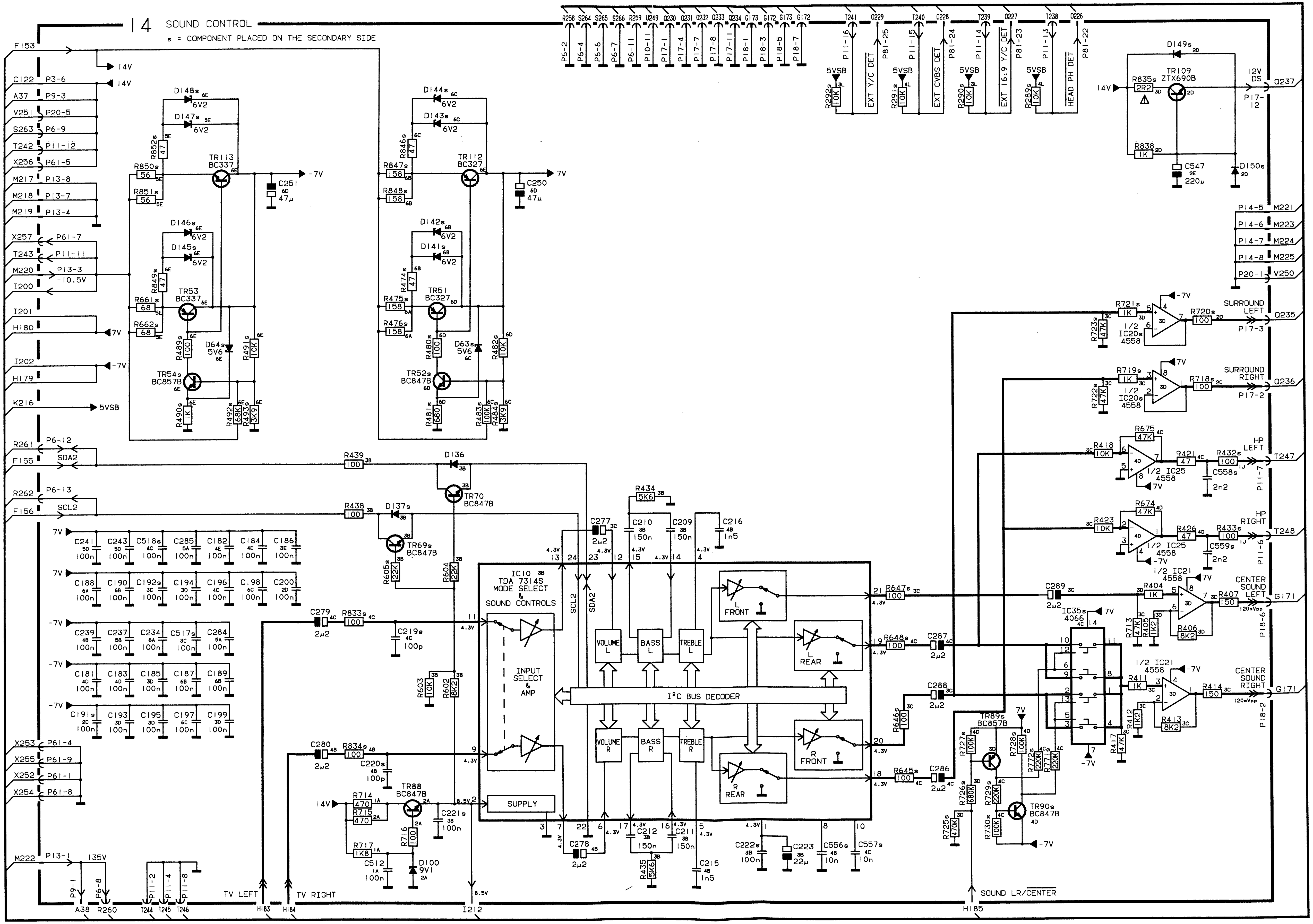

14 SOUND CONTROL
s = COMPONENT PLACED ON THE SECONDARY SIDE
F153
14V
C122 P3-6
A37 P9-3
V251 P20-5
S263 P6-9
T242 P11-12
X256 P61-5
M217 P13-8
M218 P13-7
M219 P13-4
X257 P61-7
T243 P11-11
M220 P13-3 -10.5V
I200
I201
H180
I202
H179
K216
5VSB
R261 P6-12 SDA2
F155
R262 P6-13 SCL2
F156
D148s 6V2
D147s 6V2
R852s 47
TR113 BC337
R850s 56
R851s 56
-7V
C251 47µ
D146s 6V2
D145s 6V2
R849s 47
TR53 BC337
R661s 68
R662s 68
R489s 100
D64s 5V6
R491s 10K
TR54s BC857B
R490s 1K
R492s 68K
R493s 3K9
D144s 6V2
D143s 6V2
R846s 47
TR112 BC327
R847s 158
R848s 158
7V
C250 47µ
D142s 6V2
D141s 6V2
R474s 47
TR51 BC327
R475s 158
R476s 158
R480s 100
D63s 5V6
R482s 10K
TR52s BC847B
R481s 680
R483s 100K
R484s 3K9
R439 100
D136
TR70 BC847B
R438 100
D137s
TR69s BC847B
R605s 22K
R604 22K
C241 C243 C518s C285 C182 C184 C186 100n
C188 C190 C192s C194 C196 C198 C200 100n
C239 C237 C234 C517s C284 100n
C181 C183 C185 C187 C189 100n
C191s C193 C195 C197 C199 100n
C279 2µ2
R833s 100
C219s 100p
R603 10K
R602 8K2
C280 2µ2
R834s 100
C220s 100p
TR88 BC847B
R714 470
R715 470
R717 1K8
C512 100n
R716 100
D100 9V1
C221s 100n
14V
IC10 TDA 7314S MODE SELECT & SOUND CONTROLS
INPUT SELECT & AMP
SUPPLY
SCL2
SDA2
VOLUME L
BASS L
TREBLE L
VOLUME R
BASS R
TREBLE R
I²C BUS DECODER
L FRONT
L REAR
R FRONT
R REAR
R434 5K6
C277 2µ2
C210 150n
C209 150n
C216 1n5
C278 2µ2
C212 150n
C211 150n
R435 5K6
C215 1n5
C222s 100n
C223 22µ
C556s 10n
C557s 10n
4.3V
8.5V
R258 S264 S265 S266 R259 U249 Q230 Q231 Q232 Q233 Q234 G173 G172 G173 G172
P6-2 P6-4 P6-6 P6-7 P6-11 P10-11 P17-1 P17-4 P17-7 P17-8 P17-11 P18-1 P18-3 P18-5 P18-7
T241 Q229 P11-16 P81-25 EXT Y/C DET R292s 10K
T240 Q228 P11-15 P81-24 EXT CVBS DET R291s 10K
T239 Q227 P11-14 P81-23 EXT 16:9 Y/C DET R290s 10K
T238 Q226 P11-13 P81-22 HEAD PH DET R289s 10K
5VSB
D149s
R835s 2R2
TR109 ZTX690B
14V
12V DS Q237
P17-12
R838 1K
C547 220µ
D150s
P14-5 M221
P14-6 M223
P14-7 M224
P14-8 M225
P20-1 V250
R721s 1K
R723s 47K
1/2 IC20s 4558
R720s 100
SURROUND LEFT Q235 P17-3
R719s 1K
R722s 47K
1/2 IC20s 4558
R718s 100
SURROUND RIGHT Q236 P17-2
R675 47K
R418 10K
R421 47
R432s 100
1/2 IC25 4558
C558s 2n2
HP LEFT T247 P11-7
R674 47K
R423 10K
R426 47
R433s 100
1/2 IC25 4558
C559s 2n2
HP RIGHT T248 P11-6
R647s 100
C289 2µ2
1/2 IC21 4558
R404 1K
R407 150
CENTER SOUND LEFT G171 P18-6
IC35s 4066
R713 47K
R405 1K2
R406 8K2
R648s 100
C287 2µ2
C288 2µ2
R646s 10K
R411 1K
1/2 IC21 4558
R414 150
CENTER SOUND RIGHT G171 P18-2
R417 47K
R412 1K2
R413 8K2
120mVpp
TR89s BC857B
R727s 100K
R728s 100K
R772s 220K
R771s 220K
R729s 220K
R645s 100
C286 2µ2
R726s 680K
R725s 470K
R730s 100K
TR90s BC847B
-7V
M222 P13-1 135V
P9-1 P6-8
A38 R260
P11-2 P11-4 P11-8
T244 T245 T246
TV LEFT H183
TV RIGHT H184
I212
SOUND LR/CENTER H185
X253 P61-4
X255 P61-9
X252 P61-1
X254 P61-8

DIAGRAM K DATA BUS CONVERTER **PCB drawings for PCB14 see page 2-25 and 2-26**

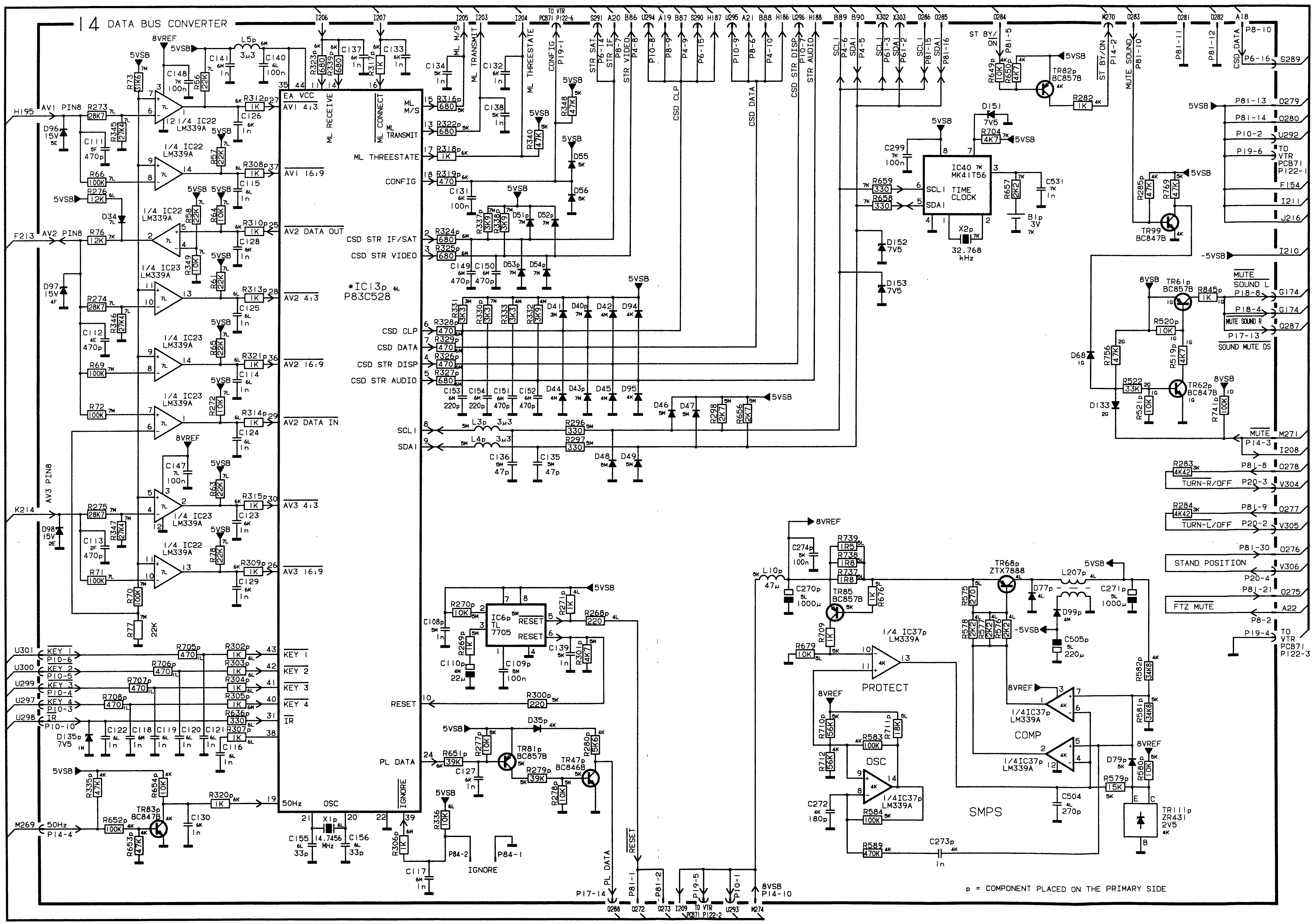

14 DATA BUS CONVERTER
H195
AV1 PIN8
F213
AV2 PIN8
K214
AV3 PIN8
U301 KEY 1 P10-6
U300 KEY 2 P10-5
U299 KEY 3 P10-4
U297 KEY 4 P10-3
U298 IR P10-10
M269 50Hz P14-4
1/4 IC22 LM339A
1/4 IC23 LM339A
*IC13p P83C528
EA VCC
AV1 4:3
AV1 16:9
AV2 DATA OUT
AV2 4:3
AV2 16:9
AV2 DATA IN
AV3 4:3
AV3 16:9
KEY 1
KEY 2
KEY 3
KEY 4
IR
50Hz
OSC
IGNORE
ML RECEIVE
ML CONNECT
ML M/S
ML TRANSMIT
ML THREESTATE
CONFIG
CSD STR IF/SAT
CSD STR VIDEO
CSD CLP
CSD DATA
CSD STR DISP
CSD STR AUDIO
SCL1
SDA1
RESET
PL DATA
X1p 14.7456 MHz
IC6p TL 7705
IC40 MK41T56 TIME CLOCK
X2p 32.768 kHz
TR82p BC857B
TR99 BC847B
TR61p BC857B
TR62p BC847B
TR81p BC857B
TR47p BC846B
TR83p BC847B
TR85 BC857B
TR68p ZTX7888
TR111p ZR431 2V5
1/4 IC37p LM339A
PROTECT
OSC
COMP
SMPS
8VREF
5VSB
-5VSB
8VSB P14-10
ST BY/ON
MUTE SOUND
STR SAT
STR IF
STR VIDEO
CSD CLP
CSD DATA
CSD STR DISP
STR AUDIO
CSD DATA
MUTE SOUND L P18-8 G174
P18-4 G174
MUTE SOUND R O287
P17-13 SOUND MUTE DS
MUTE M271
P14-3 I208
TURN-R/OFF P20-3 V304
TURN-L/OFF P20-2 V305
P81-8 O278
P81-9 O277
P81-30 O276
STAND POSITION
P20-4 V306
P81-21 O275
FTZ MUTE
A22
P8-2
P19-4 TO VTR PCB71 P122-3
P81-13 O279
P81-14 O280
P10-2 U292
P19-6 TO VTR PCB71 P122-1
F154
I211
J216
I210
P8-10
P6-16 S289
P17-14 O288
P81-1 O272
P81-2 O273
P19-5 I209 TO VTR PCB71 P122-2
P10-1 U293
M274
p = COMPONENT PLACED ON THE PRIMARY SIDE

DIAGRAM L NICAM SYSTEM B/G/I/L

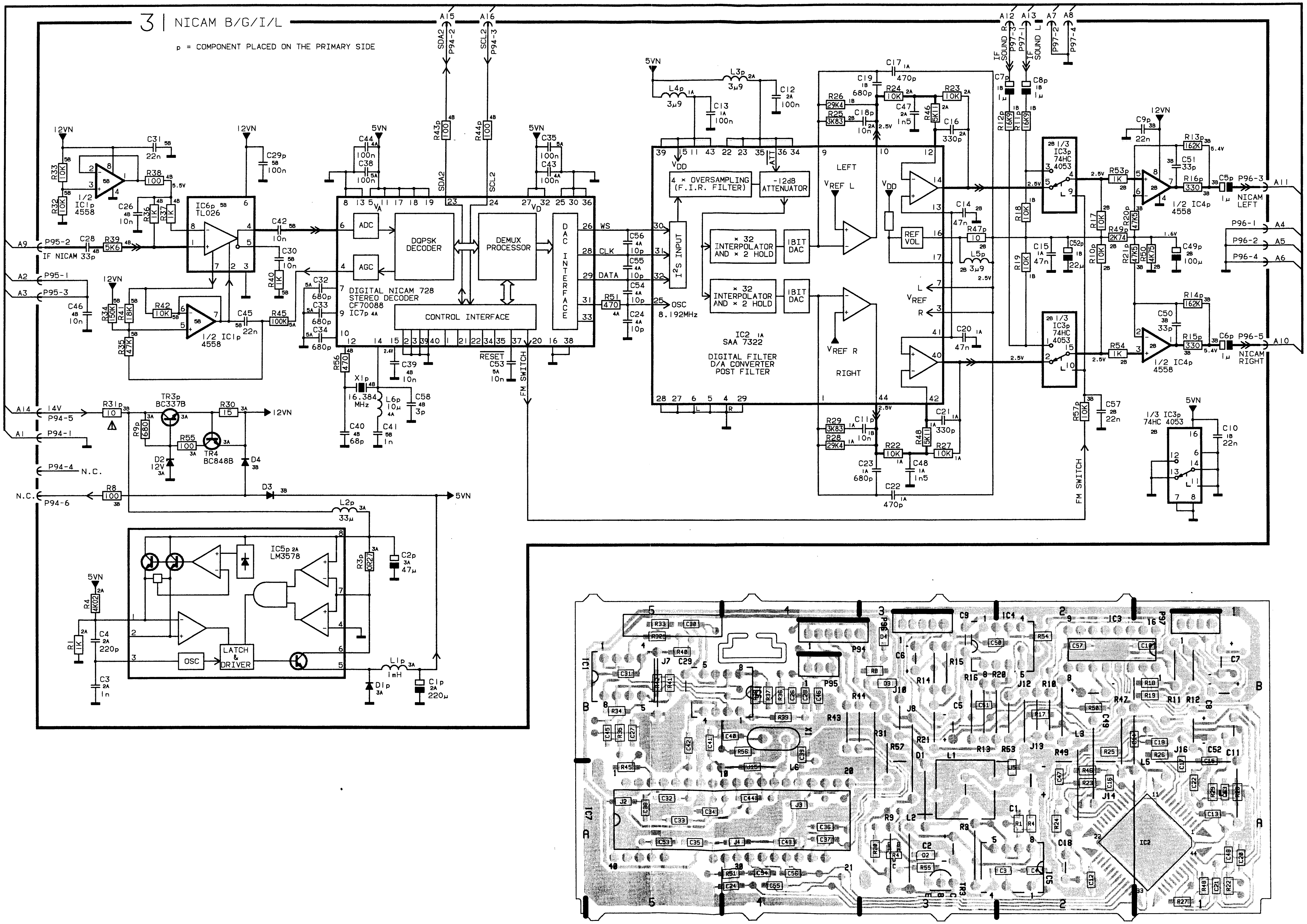

3 | NICAM B/G/I/L
p = COMPONENT PLACED ON THE PRIMARY SIDE
A15 SDA2 P94-2
A16 SCL2 P94-3
A12 IF SOUND R P97-3
A13 IF SOUND L P97-1
A7 P97-2
A8 P97-4
A9 P95-2 IF NICAM
A2 P95-1
A3 P95-3
A14 14V P94-5
A1 P94-1
P94-4 N.C.
N.C. P94-6
12VN
5VN
IC6p TL026
1/2 IC1p 4558
DIGITAL NICAM 728 STEREO DECODER CF70088 IC7p
ADC
AGC
DQPSK DECODER
DEMUX PROCESSOR
DAC INTERFACE
CONTROL INTERFACE
RESET
FM SWITCH
X1p 16.384 MHz
WS
CLK
DATA
OSC 8.192MHz
I²S INPUT
4 × OVERSAMPLING (F.I.R. FILTER)
-12dB ATTENUATOR
× 32 INTERPOLATOR AND × 2 HOLD
1BIT DAC
LEFT
RIGHT
VREF L
VREF R
VDD
REF VOL
IC2 SAA 7322
DIGITAL FILTER D/A CONVERTER POST FILTER
1/3 IC3p 74HC 4053
1/2 IC4p 4558
NICAM LEFT
NICAM RIGHT
A11
A4 P96-1
A5 P96-2
A6 P96-4
A10
P96-3
P96-5
TR3p BC337B
TR4 BC848B
D2 12V
D3
D4
IC5p LM3578
OSC
LATCH & DRIVER
L1p 1mH
D1p
C1p 220μ
L2p 33μ
C2p 47μ
IC1
IC2
IC3
IC4
IC5
IC7
P94
P95
P96
P97
TR3
J1 J2 J3 J4 J5 J6 J7 J8 J9 J10 J11 J12 J13 J14 J15 J16 J17 J18 J19 J20 J21
1 2 3 4 5 A B

DIAGRAM M MAIN POWER SUPPLY

Oscilloscope pictures for diagram M see page 2-5

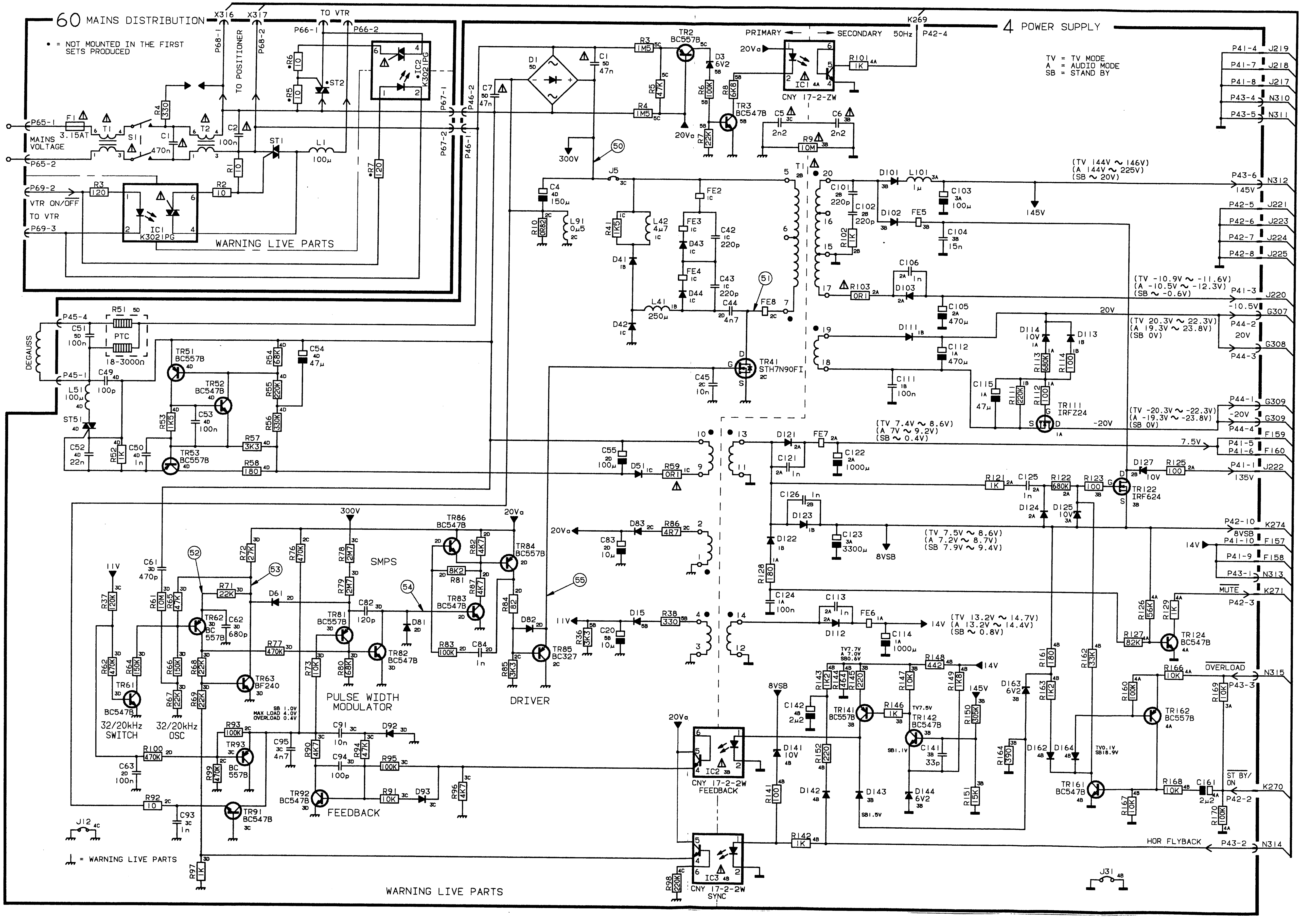

60 MAINS DISTRIBUTION
• = NOT MOUNTED IN THE FIRST SETS PRODUCED
X316
X317
TO VTR
P66-1
P66-2
P68-1
P68-2
TO POSITIONER
IC2 K3021PG
ST2
P65-1
F1 3.15AT
T1
S1
T2
C1 470n
C2 100n
MAINS VOLTAGE
P65-2
ST1
L1 100µ
R1 10
R4 330
R5 10
R6 10
R7 120
P69-2
VTR ON/OFF
TO VTR
P69-3
R3 120
R2 10
IC1 K3021PG
WARNING LIVE PARTS
P67-1
P67-2
P46-2
P46-1
C7 47n
D1
C1 47n
300V
50
C4 150µ
R10 0R82
L91 0µ5
J5
4 POWER SUPPLY
R3 1M5
TR2 BC557B
D3 6V2
R5 47K
R6 100K
R4 1M5
R8 6K8
TR3 BC547B
R7 22K
20Va
PRIMARY
SECONDARY
50Hz
K269
P42-4
R101 1K
IC1 CNY 17-2-ZW
C5 2n2
C6 2n2
R9 10M
T1
TV = TV MODE
A = AUDIO MODE
SB = STAND BY
FE2
FE3
FE4
L42 4µ7
R41 1K5
D41
D43
D44
C42 220p
C43 220p
C44 4n7
FE8
51
L41 250µ
D42
TR41 STH7N90FI
C45 10n
D101
L101 1µ
C101 220p
C102 220p
C103 100µ
R102 1K
D102
FE5
C104 15n
145V
(TV 144V ∼ 146V)
(A 144V ∼ 225V)
(SB ∼ 20V)
P43-6
N312
P41-4
J219
P41-7
J218
P41-8
J217
P43-4
N310
P43-5
N311
P42-5
J221
P42-6
J223
P42-7
J224
P42-8
J225
C106 1n
R103 0R1
D103
C105 470µ
(TV -10.9V ∼ -11.6V)
(A -10.5V ∼ -12.3V)
(SB ∼ -0.6V)
P41-3
J220
-10.5V
G307
20V
D111
C112 470µ
D114 10V
D113
R113 680K
R114 100
C111 100n
C115 47µ
R115 220K
R112 100
TR111 IRFZ24
-20V
(TV 20.3V ∼ 22.3V)
(A 19.3V ∼ 23.8V)
(SB 0V)
P44-2
G308
P44-3
(TV -20.3V ∼ -22.3V)
(A -19.3V ∼ -23.8V)
(SB 0V)
P44-1
G309
P44-4
F159
7.5V
P41-5
P41-6
F160
P41-1
J222
135V
DEGAUSS
P45-4
R51
PTC 18-3000n
C51 100n
P45-1
C49 100p
L51 100µ
ST51
C52 22n
R52 1K
C50 1n
TR51 BC557B
TR52 BC547B
C53 100n
R53 1K5
TR53 BC557B
R54 68K
R55 220K
R56 330K
C54 47µ
R57 3K3
R58 180
C55 100µ
D51
R59 0R1
D121
FE7
C121 1n
C122 1000µ
(TV 7.4V ∼ 8.6V)
(A 7V ∼ 9.2V)
(SB ∼ 0.4V)
R121 1K
C125 1n
R122 680K
R123 100
D127 10V
R125 100
TR122 IRF624
D124
D125 10V
C126 1n
D123
D122
C123 3300µ
8VSB
(TV 7.5V ∼ 8.6V)
(A 7.2V ∼ 8.7V)
(SB 7.9V ∼ 9.4V)
P42-10
8VSB
K274
14V
P41-10
F157
P41-9
F158
P43-1
N313
MUTE
K271
P42-3
R128 180
C124 100n
C113 1n
FE6
D112
C114 1000µ
(TV 13.2V ∼ 14.7V)
(A 13.2V ∼ 14.4V)
(SB ∼ 0.8V)
R126 56K
R129 1K
R127 82K
TR124 BC547B
300V
20Va
TR86 BC547B
TR84 BC557B
R82 4K7
R81 8K2
R87 4K7
TR83 BC547B
R84 82
SMPS
D83
R86 4R7
C83 10µ
20Va
11V
C61 470p
R37 20K
R61 10M
R65 47K
52
53
R71 22K
R72 27K
R76 470K
R78 2M7
R79 2M7
D61
C82 120p
54
55
TR62 BC557B
C62 680p
R77 470K
TR81 BC557B
TR82 BC547B
D81
R83 100K
C84 1n
D82
TR85 BC327
R85 3K3
R36 3K3
C20 10µ
D15
R38 330
11V
R62 470K
R64 150K
R66 150K
R68 22K
TR61 BC547B
R67 22K
R69 22K
TR63 BF240
32/20kHz SWITCH
32/20kHz OSC
R73 10K
R80 68K
PULSE WIDTH MODULATOR
DRIVER
SB 1.0V
MAX LOAD 4.0V
OVERLOAD 0.4V
R93 100K
TR93 BC557B
C95 4n7
R90 4K7
C91 10n
R94 47K
D92
C94 100p
R95 100K
R100 470K
C63 100n
R99 470K
R92 10
C93 1n
TR91 BC547B
TR92 BC547B
FEEDBACK
R91 10K
D93
R96 4K7
J12
= WARNING LIVE PARTS
R97 1K
WARNING LIVE PARTS
20Va
IC2 CNY 17-2-2W FEEDBACK
D141 10V
R152 220
R141 100
D142
D143
D144 6V2
C142 2µ2
TR141 BC557B
R143 1K2
R144 1K5
R145 220
R146 1K
TR142 BC547B
C141 33p
R147 10K
R148 442
R149 1K8
14V
145V
R150 305K
R151 15K
R164 390
D163 6V2
R161 180
R163 1K2
R162 33K
D162
D164
TR161 BC547B
R160 10K
R166 10K
OVERLOAD
N315
TR162 BC557B
R169 1K
P43-3
R168 10K
C161 2µ2
ST BY/ON
K270
P42-2
R167 10K
R170 100K
R142 1K
HOR FLYBACK
P43-2
N314
IC3 CNY 17-2-2W SYNC
R98 220K
J31

DIAGRAM N DEFLECTION & EHT **Oscilloscope pictures for diagram N see page 2-5**

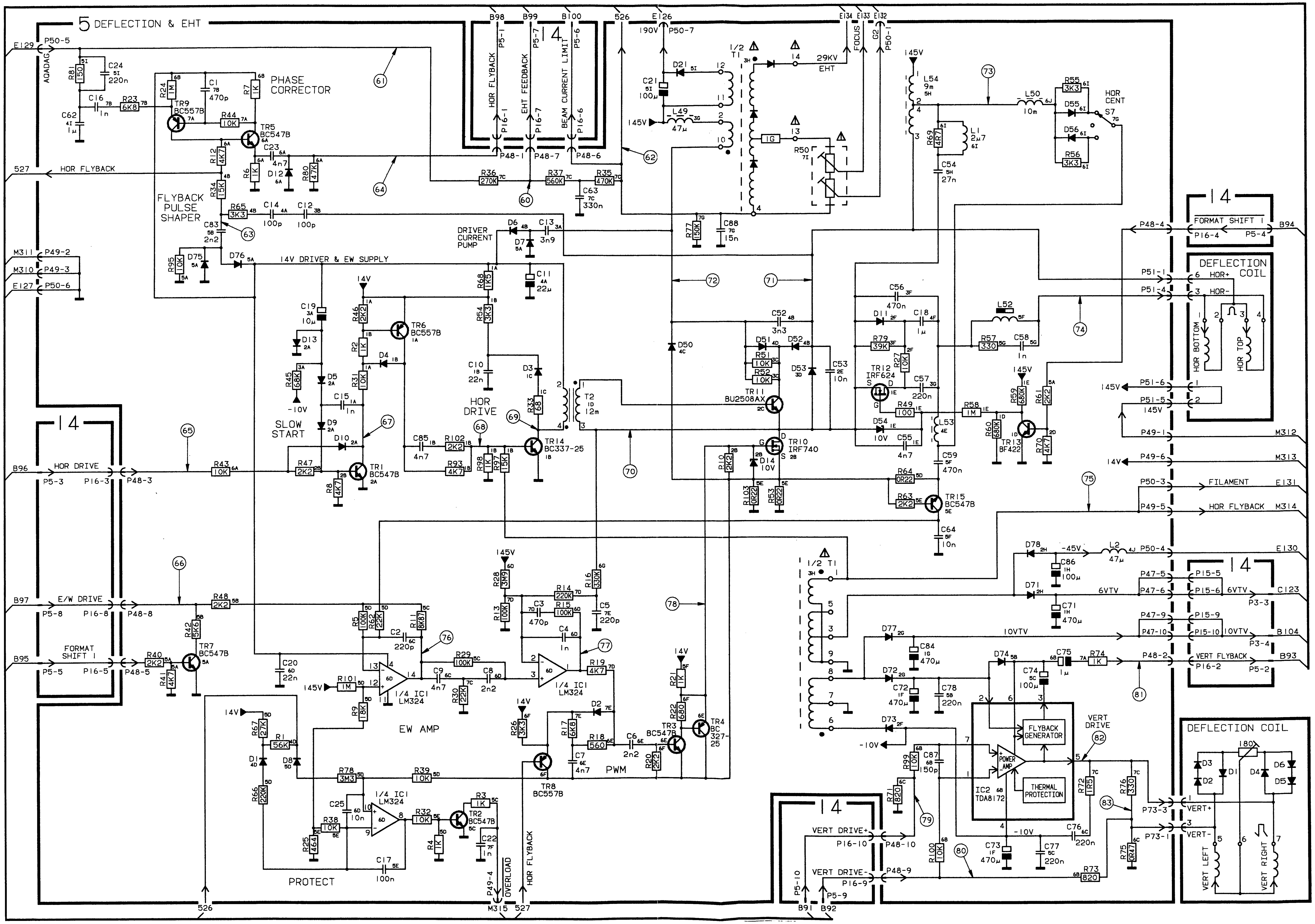

5 DEFLECTION & EHT
E129
P50-5
ADADAG
R81 150
C24 220n
C62 1µ
C16 1n
R23 6K8
R24 1M
C1 470p
R7 1K
PHASE CORRECTOR
TR9 BC557B
R44 10K
TR5 BC547B
C23 4n7
R12 4K7
R6 1K
D12
R80 47K
527
HOR FLYBACK
R34 15K
FLYBACK PULSE SHAPER
R65 3K3
C14 100p
C12 100p
C83 2n2
M311
P49-2
M310
P49-3
E127
P50-6
R95 10K
D75
D76
14V DRIVER & EW SUPPLY
B98
B99
B100
P5-1
P5-7
P5-6
HOR FLYBACK
EHT FEEDBACK
BEAM CURRENT LIMIT
P16-1
P16-7
P16-6
P48-1
P48-7
P48-6
R36 270K
R37 560K
R35 470K
C63 330n
526
E126
190V
P50-7
D21
C21 100µ
145V
L49 47µ
1/2 T1
29KV
EHT
FOCUS
G2
E134
E133
E132
P50-1
IG
R50
R77 150K
C88 15n
DRIVER CURRENT PUMP
D6
C13 3n9
D7
C11 22µ
R68 1K5
R54 3K3
C19 10µ
D13
R45 68K
-10V
D5
SLOW START
D9
D10
C15 1n
R46 2K2
TR6 BC557B
R2 1K
D4
R31 10K
C10 22n
D3
R33 68
HOR DRIVE
T2 12m
TR14 BC337-25
C85 4n7
R102 2K2
R93 4K7
R98 1K
R97 5K1
TR1 BC547B
R47 2K2
R8 4K7
R43 10K
14
B96
HOR DRIVE
P5-3
P16-3
P48-3
B97
E/W DRIVE
P5-8
P16-8
P48-8
R48 2K2
R42 5K6
TR7 BC547B
B95
FORMAT SHIFT 1
P5-5
P16-5
P48-5
R40 2K2
R41 4K7
D50
C52 3n3
D51
D52
R51 10K
R52 10K
D53
C53 10n
TR11 BU2508AX
TR10 IRF740
D14 10V
R10 2K2
R103 0R22
R53 0R22
C56 470n
D11
C18 1µ
R79 39K
R27 10K
TR12 IRF624
C57 220n
R49 100
D54 10V
C55 4n7
L53
C59 470n
R64 0R22
R63 2K2
TR15 BC547B
C64 10n
L52
R57 330
C58 1n
R58 1M
R59 680K
R60 680K
TR13 BF422
R61 2K2
R70 4K7
L54 9m
L50 10m
R55 3K3
D55
D56
R56 3K3
S7
HOR CENT
R69 4R7
L1 2µ7
C54 27n
P48-4
FORMAT SHIFT 1
P16-4
P5-4
B94
DEFLECTION COIL
P51-1
HOR+
P51-4
HOR-
HOR BOTTOM
HOR TOP
P51-6
P51-5
P49-1
M312
14V
P49-6
M313
P50-3
FILAMENT
E131
P49-5
HOR FLYBACK
M314
D78
-45V
L2 47µ
P50-4
E130
C86 100µ
D71
C71 470µ
6VTV
P47-5
P47-6
P15-5
P15-6
P3-3
C123
D77
C84 470µ
10VTV
P47-9
P47-10
P15-9
P15-10
P3-4
B104
D74
C75 1µ
R74 1K
P48-2
VERT FLYBACK
P16-2
P5-2
B93
D72
C74 100µ
C72 470µ
C78 220n
D73
-10V
R99 10K
C87 150p
FLYBACK GENERATOR
POWER AMP
THERMAL PROTECTION
IC2 TDA8172
VERT DRIVE
R72 1R5
R76 330
R71 820
R100 10K
C73 470µ
C77 220n
C76 220n
R73 820
R75 0R47
P73-3
VERT+
P73-1
VERT-
DEFLECTION COIL
D3
D2
D1
D4
D6
D5
VERT LEFT
VERT RIGHT
VERT DRIVE+
P16-10
P48-10
VERT DRIVE-
P16-9
P48-9
P5-10
P5-9
B91
B92
145V
R28 3M9
R13 100K
C3 470p
R14 220K
R15 100K
R16 330K
C5 220p
C4 1n
R19 4K7
1/4 IC1 LM324
R5 100K
R62 22K
R11 8K87
C2 220p
R29 100K
C20 22n
R101 1M
C9 4n7
R30 22K
C8 2n2
EW AMP
R9 1K8
D2
R26 3K3
R17 6K8
R18 560
C6 2n2
C7 4n7
PWM
R20 2K2
R21 1K
R22 680
TR3 BC547B
TR4 BC327-25
TR8 BC557B
R67 27K
R1 56K
D1
D8
R66 220K
R78 3M3
R39 10K
C25 10n
R38 10K
R25 464
R32 10K
TR2 BC547B
R3 1K
R4 1K
C22
C17 100n
PROTECT
HOR FLYBACK
OVERLOAD
P49-4
M315
526
527
(60)
(61)
(62)
(63)
(64)
(65)
(66)
(67)
(68)
(69)
(70)
(71)
(72)
(73)
(74)
(75)
(76)
(77)
(78)
(79)
(80)
(81)
(82)
(83)

DIAGRAM O MAIN MICROCOMPUTER

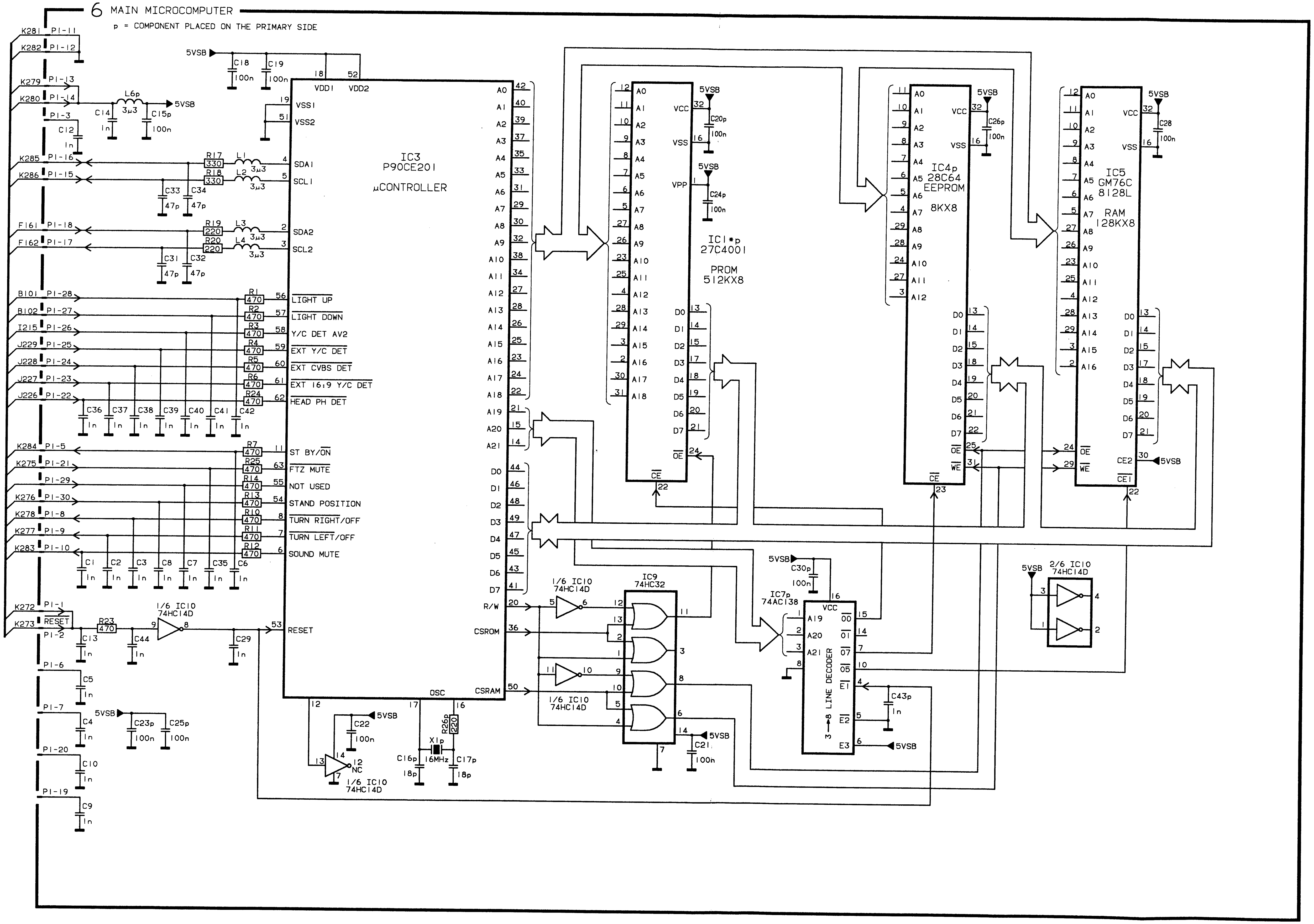
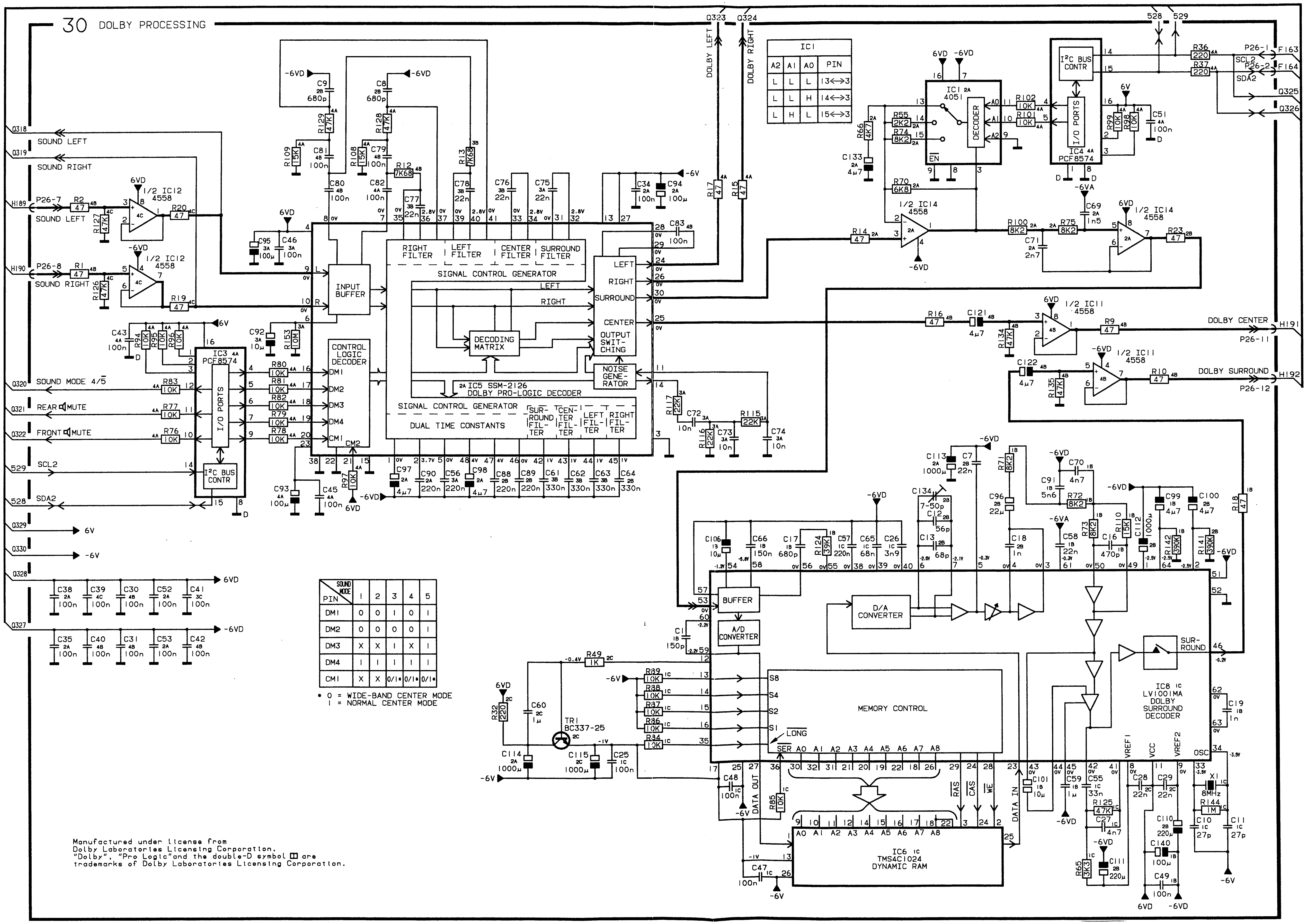

6 MAIN MICROCOMPUTER
p = COMPONENT PLACED ON THE PRIMARY SIDE
5VSB
IC3
P90CE201
µCONTROLLER
VDD1
VDD2
VSS1
VSS2
SDA1
SCL1
SDA2
SCL2
LIGHT UP
LIGHT DOWN
Y/C DET AV2
EXT Y/C DET
EXT CVBS DET
EXT 16:9 Y/C DET
HEAD PH DET
ST BY/ON
FTZ MUTE
NOT USED
STAND POSITION
TURN RIGHT/OFF
TURN LEFT/OFF
SOUND MUTE
RESET
OSC
R/W
CSROM
CSRAM
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
A16
A17
A18
A19
A20
A21
D0
D1
D2
D3
D4
D5
D6
D7
K281 P1-11
K282 P1-12
K279 P1-13
K280 P1-14
P1-3
K285 P1-16
K286 P1-15
F161 P1-18
F162 P1-17
B101 P1-28
B102 P1-27
I215 P1-26
J229 P1-25
J228 P1-24
J227 P1-23
J226 P1-22
K284 P1-5
K275 P1-21
P1-29
K276 P1-30
K278 P1-8
K277 P1-9
K283 P1-10
K272 P1-1
K273 RESET
P1-2
P1-6
P1-7
P1-20
P1-19
L6p 3µ3
C14 1n
C15p 100n
C12 1n
C18 100n
C19 100n
R17 330
R18 330
L1 3µ3
L2 3µ3
C33 47p
C34 47p
R19 220
R20 220
L3 3µ3
L4 3µ3
C31 47p
C32 47p
R1 470
R2 470
R3 470
R4 470
R5 470
R6 470
R24 470
C36 1n
C37 1n
C38 1n
C39 1n
C40 1n
C41 1n
C42 1n
R7 470
R25 470
R14 470
R13 470
R10 470
R11 470
R12 470
C1 1n
C2 1n
C3 1n
C8 1n
C7 1n
C35 1n
C6 1n
R23 470
1/6 IC10 74HC14D
C13 1n
C44 1n
C29 1n
C5 1n
C4 1n
C23p 100n
C25p 100n
C10 1n
C9 1n
C22 100n
NC
1/6 IC10 74HC14D
R26p 220
X1p 16MHz
C16p 18p
C17p 18p
IC1*p
27C4001
PROM
512KX8
VCC
VSS
VPP
C20p 100n
C24p 100n
OE
CE
IC4p
28C64
EEPROM
8KX8
C26p 100n
WE
IC5
GM76C
8128L
RAM
128KX8
C28 100n
CE2
CE1
IC9
74HC32
C21 100n
IC7p
74AC138
3→8 LINE DECODER
VCC
A19
A20
A21
O0
O1
O7
O5
E1
E2
E3
C30p 100n
C43p 1n
2/6 IC10
74HC14D

DIAGRAM P DOLBY PROCESSING **PCB drawings for PCB30 see page 2-35**


30 DOLBY PROCESSING
Q318 SOUND LEFT
Q319 SOUND RIGHT
H189 P26-7 SOUND LEFT
H190 P26-8 SOUND RIGHT
Q320 SOUND MODE 4/5
Q321 REAR MUTE
Q322 FRONT MUTE
529 SCL2
528 SDA2
Q329 6V
Q330 -6V
Q328 6VD
Q327 -6VD
1/2 IC12 4558
IC3 PCF8574
I/O PORTS
I²C BUS CONTR
INPUT BUFFER
CONTROL LOGIC DECODER
RIGHT FILTER
LEFT FILTER
CENTER FILTER
SURROUND FILTER
SIGNAL CONTROL GENERATOR
DECODING MATRIX
LEFT
RIGHT
SURROUND
CENTER
OUTPUT SWITCHING
NOISE GENERATOR
IC5 SSM-2126 DOLBY PRO-LOGIC DECODER
DUAL TIME CONSTANTS
SURROUND FILTER
CENTER FILTER
LEFT FILTER
RIGHT FILTER
Q323 DOLBY LEFT
Q324 DOLBY RIGHT
IC1 4051
DECODER
IC4 PCF8574
1/2 IC14 4558
1/2 IC11 4558
528 529
P26-1 F163 SCL2
P26-2 F164 SDA2
Q325
Q326
DOLBY CENTER H191 P26-11
DOLBY SURROUND H192 P26-12
TR1 BC337-25
BUFFER
A/D CONVERTER
D/A CONVERTER
MEMORY CONTROL
SUR-ROUND
IC8 LV1001MA DOLBY SURROUND DECODER
VREF1 VCC VREF2 OSC
X1 8MHz
SER A0 A1 A2 A3 A4 A5 A6 A7 A8
S8 S4 S2 S1 LONG
DATA OUT
RAS CAS WE
DATA IN
IC6 TMS4C1024 DYNAMIC RAM

IC1			
A2	A1	A0	PIN
L	L	L	13↔3
L	L	H	14↔3
L	H	L	15↔3

PIN \ SOUND MODE	1	2	3	4	5
DM1	0	0	1	0	1
DM2	0	0	0	0	1
DM3	X	X	1	X	1
DM4	1	1	1	1	1
CM1	X	X	0/1*	0/1*	0/1*

* 0 = WIDE-BAND CENTER MODE
1 = NORMAL CENTER MODE

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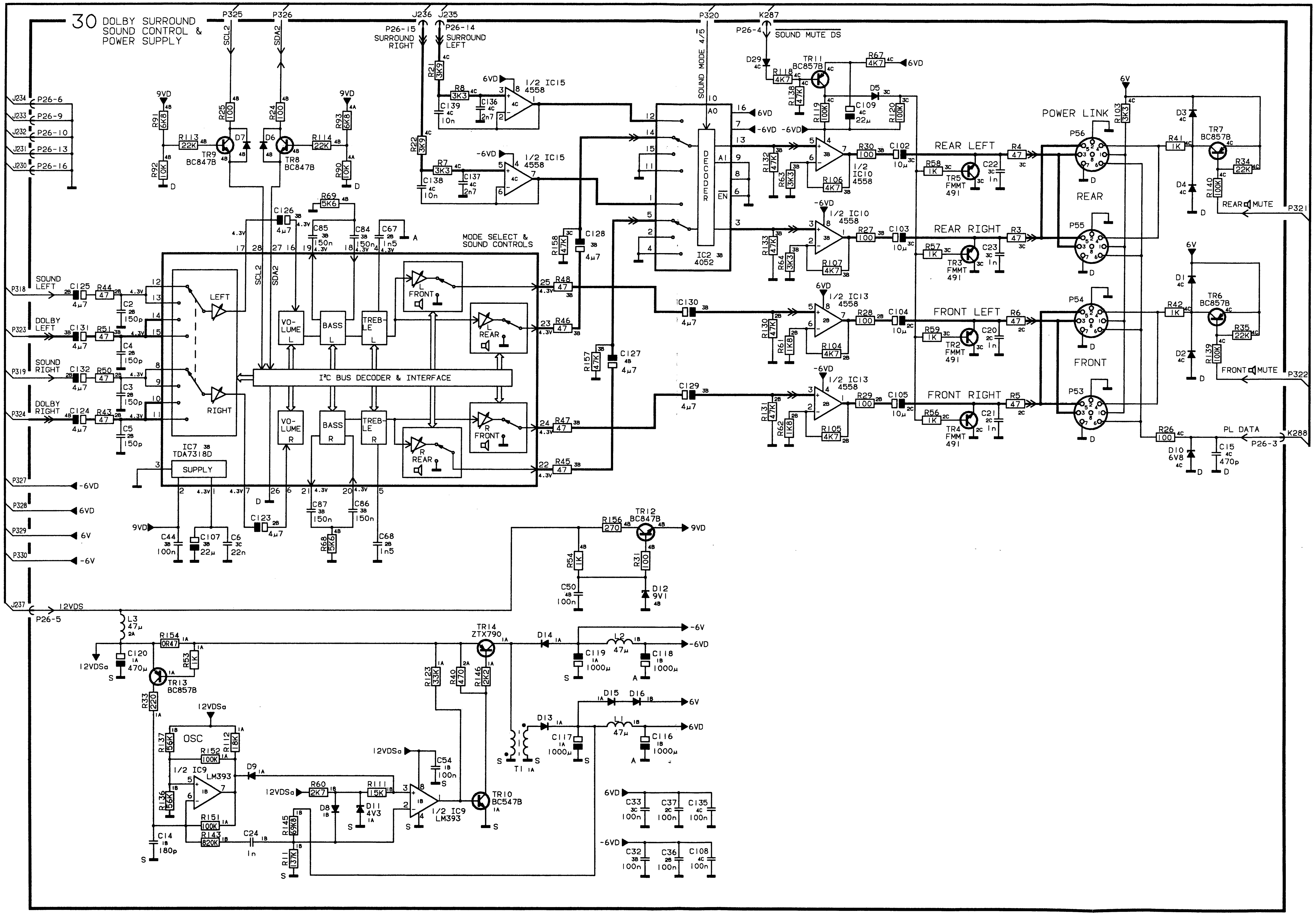
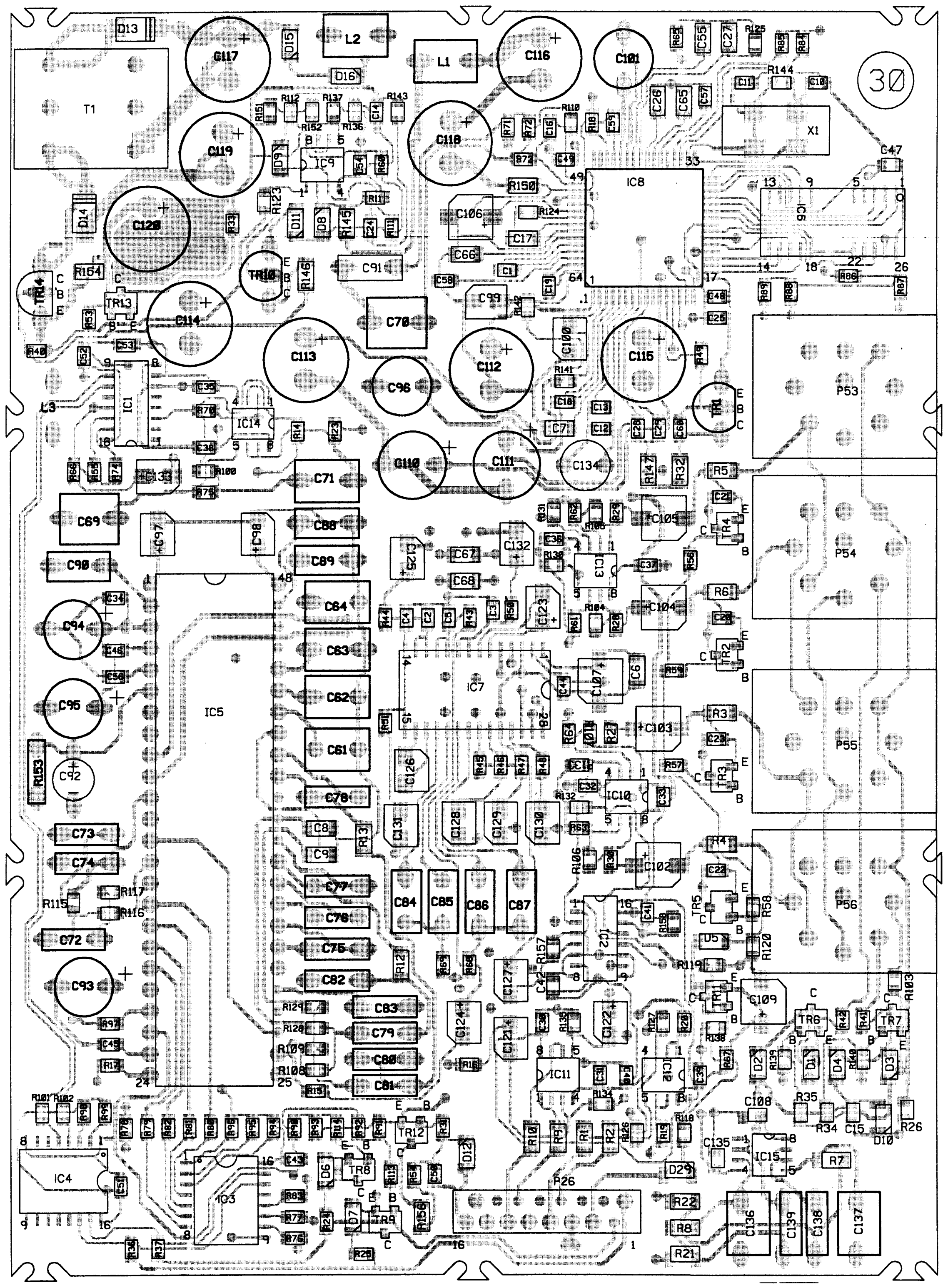
DIAGRAM Q DOLBY SURROUND CONTROL & POWER SUPPLY PCB drawings for PCB30 see page 2-35


30 DOLBY SURROUND SOUND CONTROL & POWER SUPPLY
P325
P326
SCL2
SDA2
J236
J235
P26-15 SURROUND RIGHT
P26-14 SURROUND LEFT
P320
SOUND MODE 4/5
K287
P26-4
SOUND MUTE DS
J234 P26-6
J233 P26-9
J232 P26-10
J231 P26-13
J230 P26-16
9VD
R91 6K8
R92 10K
R25 100
R113 22K
TR9 BC847B
D7
D6
TR8 BC847B
R24 100
R114 22K
R93 6K8
R90 10K
R21 3K9
R8 3K3
C139 10n
C136 2n7
1/2 IC15 4558
R22 3K9
R7 3K3
C138 10n
C137 2n7
6VD
-6VD
D29
R118 4K7
R138 47K
TR11 BC857B
R67 4K7
R119 100K
C109 22µ
D5
R120 100K
6V
R103 3K3
POWER LINK
P56
REAR
P55
P54
FRONT
P53
D3
TR7 BC857B
R41 1K
R34 22K
D4
R140 100K
REAR MUTE
P321
D1
TR6 BC857B
R42 1K
R35 22K
D2
R139 100K
FRONT MUTE
P322
R26 100
D10 6V8
C15 470p
PL DATA
P26-3
K288
A0
A1
DECODER
EN
IC2 4052
R132 47K
R63 3K3
1/2 IC10 4558
R106 4K7
R30 100
C102 10µ
REAR LEFT
R4 47
R58 1K
TR5 FMMT 491
C22 1n
R133 47K
R64 3K3
R107 4K7
R27 100
C103 10µ
REAR RIGHT
R3 47
R57 1K
TR3 FMMT 491
C23 1n
R130 47K
R61 1K8
1/2 IC13 4558
R104 4K7
R28 100
C104 10µ
FRONT LEFT
R6 47
R59 1K
TR2 FMMT 491
C20 1n
R131 47K
R62 1K8
R105 4K7
R29 100
C105 10µ
FRONT RIGHT
R5 47
R56 1K
TR4 FMMT 491
C21 1n
R158 47K
C128 4µ7
C130 4µ7
R157 47K
C127 4µ7
C129 4µ7
MODE SELECT & SOUND CONTROLS
C126 4µ7
R69 5K6
C85 150n
C84 150n
C67 1n5
P318 SOUND LEFT
C125 4µ7
R44 47
C2 150p
P323 DOLBY LEFT
C131 4µ7
R51 47
C4 150p
P319 SOUND RIGHT
C132 4µ7
R50 47
C3 150p
P324 DOLBY RIGHT
C124 4µ7
R43 47
C5 150p
LEFT
RIGHT
VOLUME L
BASS L
TREBLE L
L FRONT
R REAR
I²C BUS DECODER & INTERFACE
VOLUME R
BASS R
TREBLE R
R FRONT
R REAR
R48 47
R46 47
R47 47
R45 47
IC7 TDA7318D
SUPPLY
P327 -6VD
P328 6VD
P329 6V
P330 -6V
C44 100n
C107 22µ
C6 22n
C123 4µ7
C87 150n
C86 150n
R68 5K6
C68 1n5
R156 270
TR12 BC847B
9VD
R54 1K
R31 100
C50 100n
D12 9V1
J237 12VDS
P26-5
L3 47µ
R154 0R47
C120 470µ
R53 1K
12VDSa
TR13 BC857B
R33 220
TR14 ZTX790
R123 33K
R40 470
R146 2K2
D14
L2 47µ
-6V
-6VD
C119 1000µ
C118 1000µ
D15
D16
6V
D13
L1 47µ
6VD
C117 1000µ
C116 1000µ
T1
12VDSa
OSC
R137 56K
R112 18K
R152 100K
1/2 IC9 LM393
R136 56K
R151 100K
R143 820K
C14 180p
C24 1n
D9
R60 2K7
R111 15K
D8
D11 4V3
R145 69K8
R11 13K7
C54 100n
1/2 IC9 LM393
TR10 BC547B
C33 100n
C37 100n
C135 100n
C32 100n
C36 100n
C108 100n

PCB 30


30
IC5
IC8
T1
P53
P54
P55
P56
P26

PCB 20

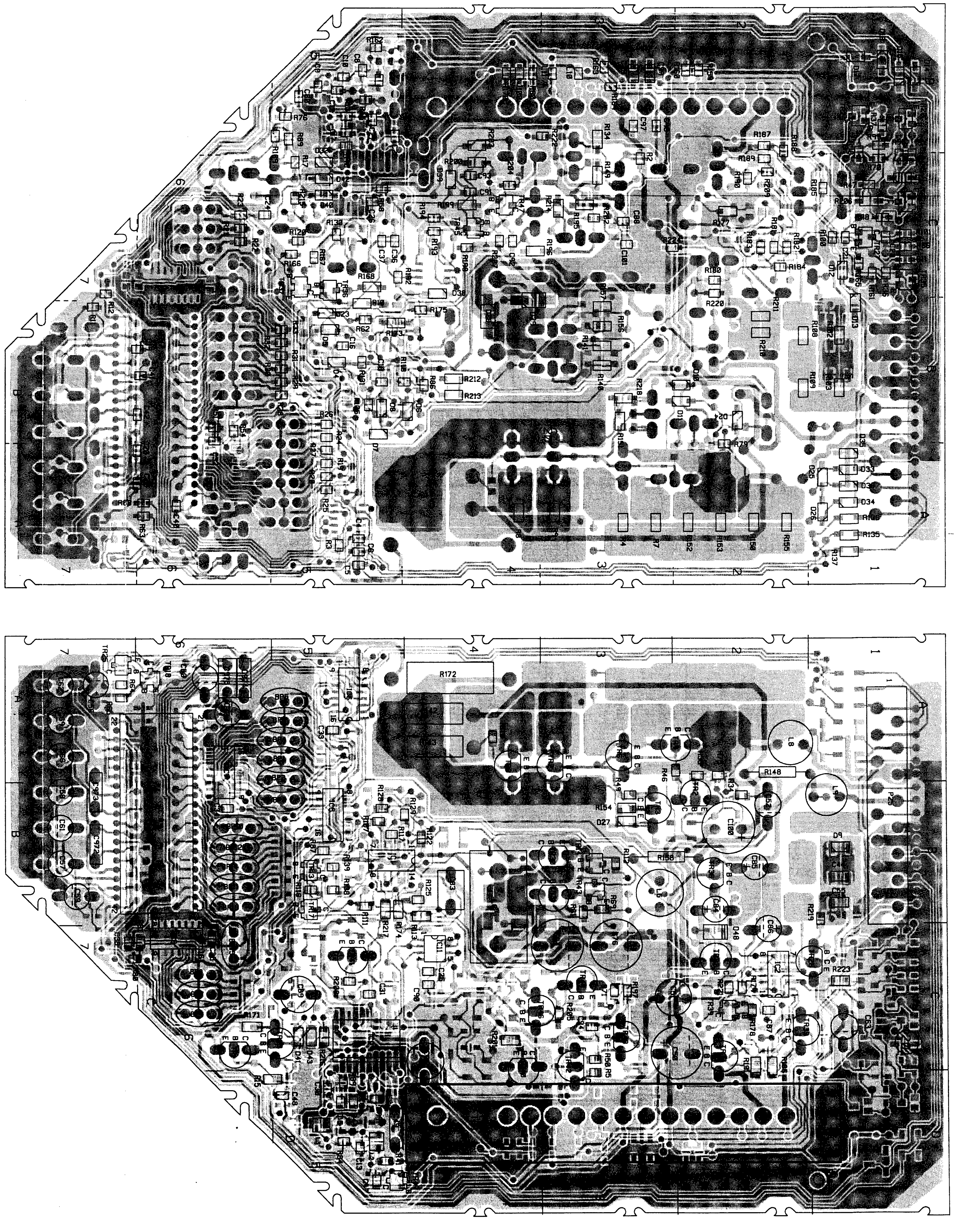


DIAGRAM R SATELLITE VIDEO PROCESSING

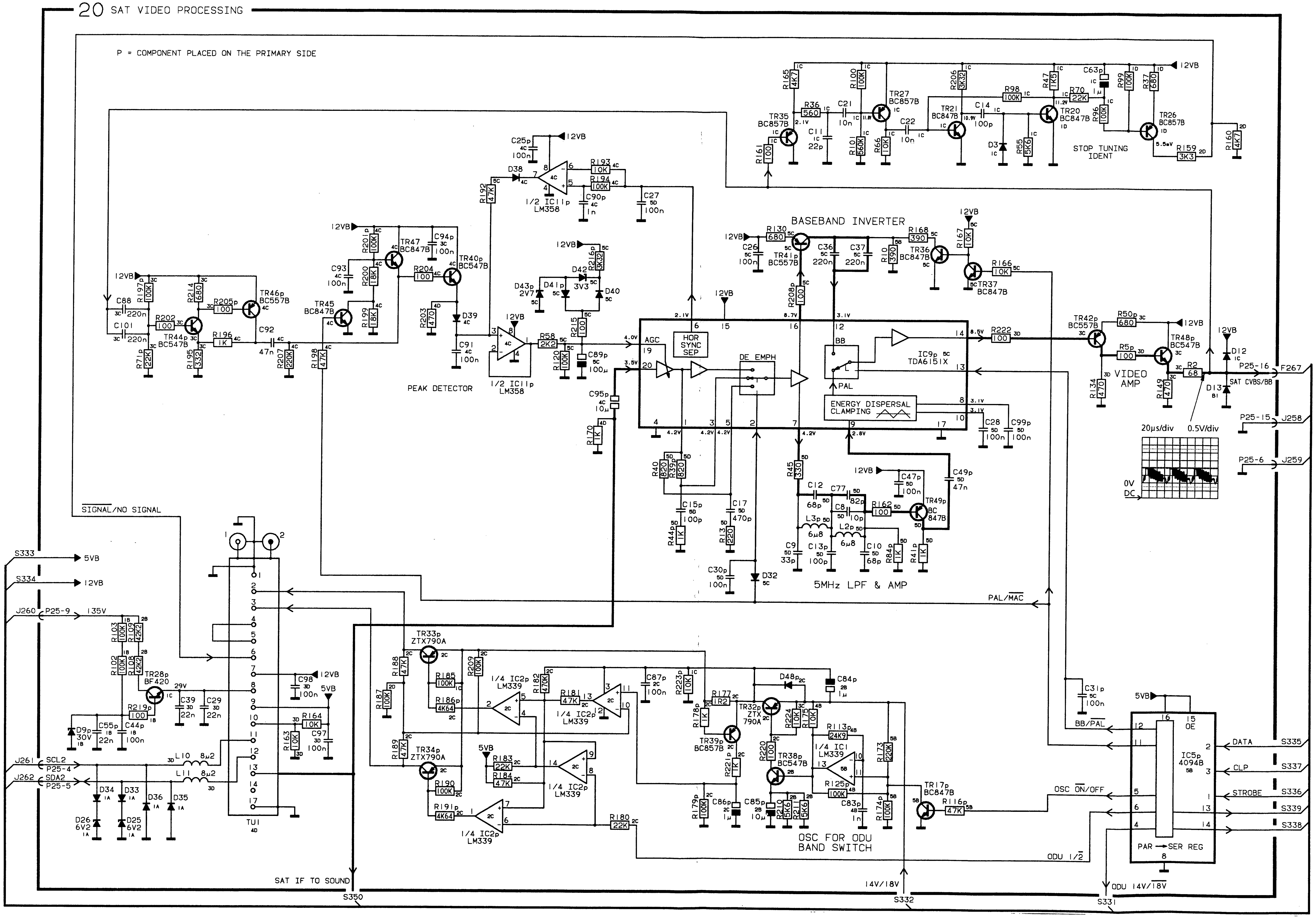
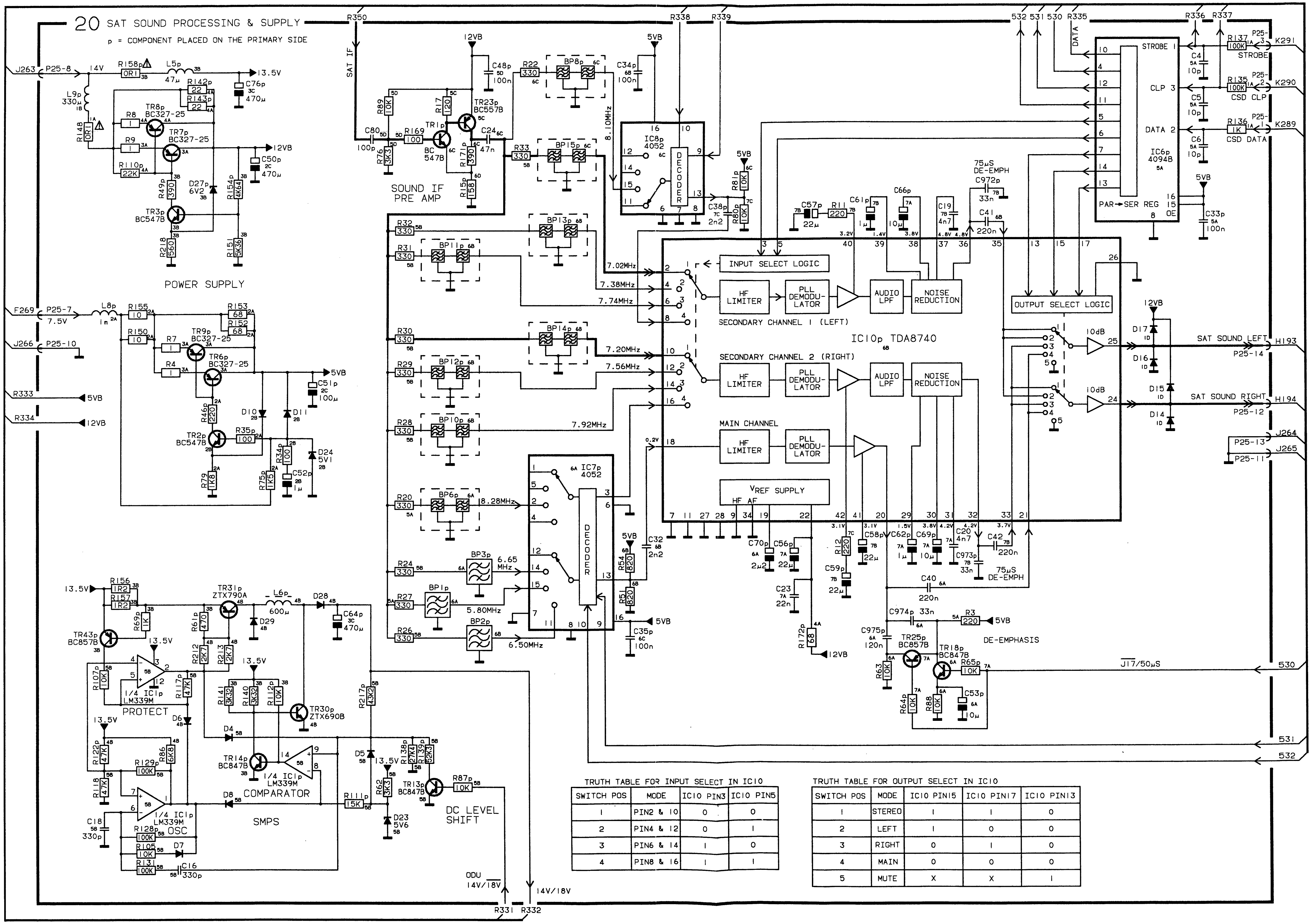

20 SAT VIDEO PROCESSING
P = COMPONENT PLACED ON THE PRIMARY SIDE
12VB
TR35 BC857B
R165 4K7
R36 560
C21 10n
C11 22p
R161 100
R100 100K
R101 560K
TR27 BC857B
R66 10K
C22 10n
R206 3K32
TR21 BC847B
C14 100p
D3
R55 5K6
R98 100K
R47 1K5
R70 22K
C63p 1µ
TR20 BC847B
R96 10K
R99 100K
R37 680
TR26 BC857B
R159 3K3
R160 4K7
STOP TUNING IDENT
C25p 100n
D38
R192 47K
1/2 IC11p LM358
R193 10K
R194 100K
C90p 1n
C27 100n
12VB
R201p 100K
C94p 100n
TR47 BC847B
TR40p BC547B
C93 100n
R200 18K
R204 100
R199 18K
R203 470
D39
C91 100n
PEAK DETECTOR
12VB
R197p 10K
C88 220n
C101 220n
R214 680
R205p 100
TR46p BC557B
R202 100
TR44p BC547B
R196 1K
C92 47n
R71p 22K
R195 3K32
TR45 BC847B
R207 220K
R198 47K
12VB
R216p 3K32
D42 3V3
D43p 2V7
D41p
D40
R215 100
12VB
R58 2K2
1/2 IC11p LM358
R120 100K
C89p 100µ
C95p 10µ
R170 1K
BASEBAND INVERTER
12VB
R130 680
C26 100n
TR41p BC557B
C36 220n
C37 220n
R10 390
R168 390
TR36 BC847B
12VB
R167 10K
R166 10K
TR37 BC847B
R208p 100
12VB
AGC
HOR SYNC SEP
DE EMPH
BB
PAL
IC9p TDA6151X
ENERGY DISPERSAL CLAMPING
C28 100n
C99p 100n
R222 100
R40 820
R39p 820
C15p 100p
R44p 1K
C17 470p
R13 220
C30p 100n
D32
R45 330
12VB
C47p 100n
C49p 47n
C12 68p
C77 82p
C8 10p
R162 100
TR49p BC847B
L3p 6µ8
L2p 6µ8
C9 33p
C13p 100p
C10 68p
R84p 1K
R41p 1K
5MHz LPF & AMP
PAL/MAC
TR42p BC557B
R50p 680
12VB
R5p 100
TR48p BC547B
R2 68
VIDEO AMP
R134 470
R149 470
12VB
D12
D13
P25-16
F267
SAT CVBS/BB
P25-15
J258
P25-6
J259
20µs/div
0.5V/div
0V DC
SIGNAL/NO SIGNAL
S333
5VB
S334
12VB
J260
P25-9
135V
R103 100K
R109 42K2
R102 100K
R108 42K2
TR28p BF420
29V
R219p 100
C39 22n
C29 22n
D9p 30V
C55p 22n
C44p 100n
J261
SCL2
P25-4
J262
SDA2
P25-5
L10 8µ2
L11 8µ2
D34
D33
D36
D35
D26 6V2
D25 6V2
TU1
C98 100n
12VB
5VB
R164 10K
R163 10K
C97 100n
TR33p ZTX790A
R188 47K
R187 100K
R185 100K
R186p 4K64
R209 100K
1/4 IC2p LM339
R182 470K
R181 47K
1/4 IC2p LM339
C87p 100n
R223p 10K
5VB
R183 22K
R184 47K
1/4 IC2p LM339
TR34p ZTX790A
R189 47K
R190 100K
R191p 4K64
1/4 IC2p LM339
R180 22K
D48p
C84p 1µ
R177 1R2
TR32p ZTX 790A
R178p 1K
TR39p BC857B
R221p 1K
C86p 1µ
R220 100
TR38p BC547B
C85p 10µ
R210 5K6
R211 5K6
R224 10K
R175 10K
R113p 24K9
1/4 IC1 LM339
R125p 100K
C83p 1n
R179p 100K
R173 220K
R174p 100K
OSC FOR ODU BAND SWITCH
TR17p BC847B
R116p 47K
C31p 100n
BB/PAL
5VB
IC5p 4094B
OE
PAR → SER REG
DATA
S335
CLP
S337
STROBE
S336
S339
S338
OSC ON/OFF
ODU 1/2
ODU 14V/18V
S331
14V/18V
S332
SAT IF TO SOUND
S350

DIAGRAM S SATELLITE SOUND PROCESSING & POWER SUPPLY


20 SAT SOUND PROCESSING & SUPPLY
p = COMPONENT PLACED ON THE PRIMARY SIDE
J263
P25-8
14V
R158p 0R1
L5p 47µ
13.5V
C76p 470µ
L9p 330µ
R148 0R1
R142p 22
R143p 22
TR8p BC327-25
R8
TR7p BC327-25
R9
R110p 22K
12VB
C50p 470µ
R49p 390
D27p 6V2
R154p 4K64
TR3p BC547B
R218 560
R151 5K36
POWER SUPPLY
F269
P25-7
7.5V
L8p 1m
R155 10
R153 68
R152 68
R150 10
TR9p BC327-25
R7
TR6p BC327-25
R4
5VB
C51p 100µ
J266
P25-10
R333
5VB
R334
12VB
R46p 220
D10
D11
TR2p BC547B
R35p 100
R34p 100
C52p 1µ
D24 5V1
R79 1K8
R75p 1K5
13.5V
R156 1R2
R157 1R2
TR31p ZTX790A
L6p 600µ
D28
C64p 470µ
D29
TR43p BC857B
R69p 1K
R61p 470
1/4 IC1p LM339M
PROTECT
R107p 10K
R117p 4K7
R212 2K7
R213 2K7
R141 3K32
R140 3K32
R112p 10K
TR30p ZTX690B
R217p 43K2
D6
D4
TR14p BC847B
1/4 IC1p LM339M
COMPARATOR
D5
R62 3K3
R138p 27K4
R139p 52K3
TR13p BC847B
R87p 10K
DC LEVEL SHIFT
R122p 47K
R86 6K8
R129p 100K
R118 47K
1/4 IC1p LM339M
OSC
D8
SMPS
R111p 15K
D23 5V6
C18 330p
R128p 100K
R105 10K
D7
R131 100K
C16 330p
ODU
14V/18V
R331
R332
R350
SAT IF
12VB
C48p 100n
R22 330
BP8p
C34p 100n
5VB
R89 10K
R17 120
TR23p BC557B
C80 100p
R169 100
TR1p BC 547B
C24 47n
R76 3K3
R171p 390
R15p 158
SOUND IF PRE AMP
R33 330
BP15p
8.10MHz
R338
R339
IC8p 4052
DECODER
R81p 10K
R80p 10K
C38p 2n2
R32 330
BP13p
R31 330
BP11p
7.02MHz
7.38MHz
7.74MHz
R30 330
BP14p
7.20MHz
R29 330
BP12p
7.56MHz
R28 330
BP10p
7.92MHz
R20 330
BP6p
8.28MHz
IC7p 4052
DECODER
R24 330
BP3p
6.65 MHz
R27 330
BP1p
5.80MHz
R26 330
BP2p
6.50MHz
R54 820
R51 820
C32 2n2
C35p 100n
5VB
C57p 22µ
R11 220
C61p 1µ
C66p 10µ
C19 4n7
75µS DE-EMPH
C972p 33n
C41 220n
INPUT SELECT LOGIC
HF LIMITER
PLL DEMODULATOR
AUDIO LPF
NOISE REDUCTION
SECONDARY CHANNEL 1 (LEFT)
IC10p TDA8740
SECONDARY CHANNEL 2 (RIGHT)
MAIN CHANNEL
VREF SUPPLY
HF AF
OUTPUT SELECT LOGIC
10dB
C70p 2µ2
C56p 22µ
R12 220
C58p 22µ
C62p 1µ
C69p 10µ
C20 4n7
C973p 33n
C42 220n
75µS DE-EMPH
C59p 22µ
C23 22n
C40 220n
R172p 68
12VB
C974p 33n
R3 220
5VB
C975p 120n
TR25p BC857B
TR18p BC847B
R65p 10K
DE-EMPHASIS
R63 10K
R64p 10K
R88 10K
C53p 10µ
J17/50µS
530
531
532
532 531 530 R335
DATA
R336 R337
STROBE
CLP
DATA
IC6p 4094B
PAR→SER REG
OE
C4 10p
C5 10p
C6 10p
C33p 100n
5VB
R137 100K
R135 100K
R136 1K
P25-3
P25-2
P25-1
STROBE
CSD CLP
CSD DATA
K291
K290
K289
12VB
D17
D16
D15
D14
SAT SOUND LEFT
H193
P25-14
SAT SOUND RIGHT
H194
P25-12
J264
P25-13
J265
P25-11

TRUTH TABLE FOR INPUT SELECT IN IC10

SWITCH POS	MODE	IC10 PIN3	IC10 PIN5
1	PIN2 & 10	0	0
2	PIN4 & 12	0	1
3	PIN6 & 14	1	0
4	PIN8 & 16	1	1

TRUTH TABLE FOR OUTPUT SELECT IN IC10

SWITCH POS	MODE	IC10 PIN15	IC10 PIN17	IC10 PIN13
1	STEREO	1	1	0
2	LEFT	1	0	0
3	RIGHT	0	1	0
4	MAIN	0	0	0
5	MUTE	X	X	1

DIAGRAM T CAMCORDER INTERFACE & HEADPHONE

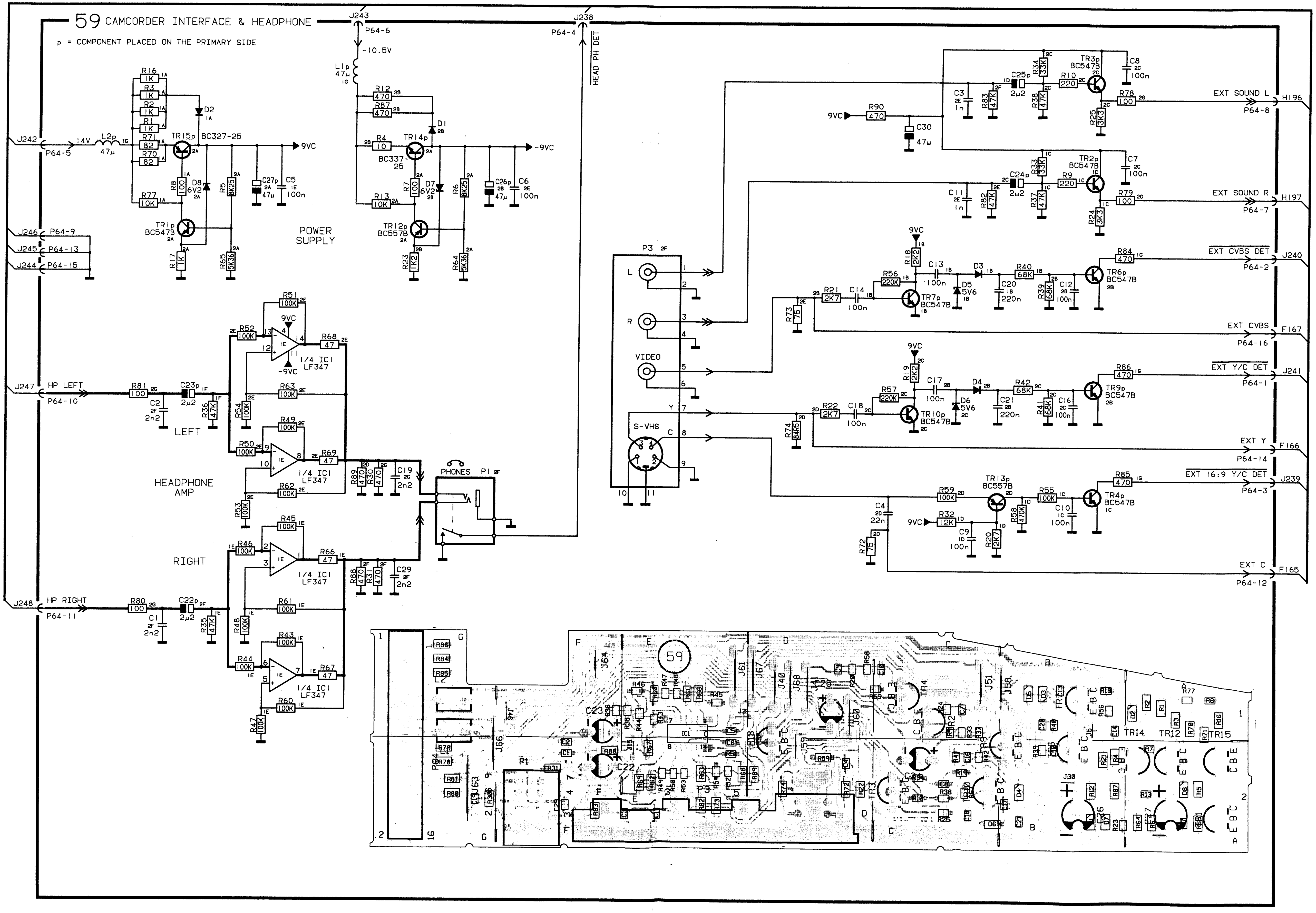
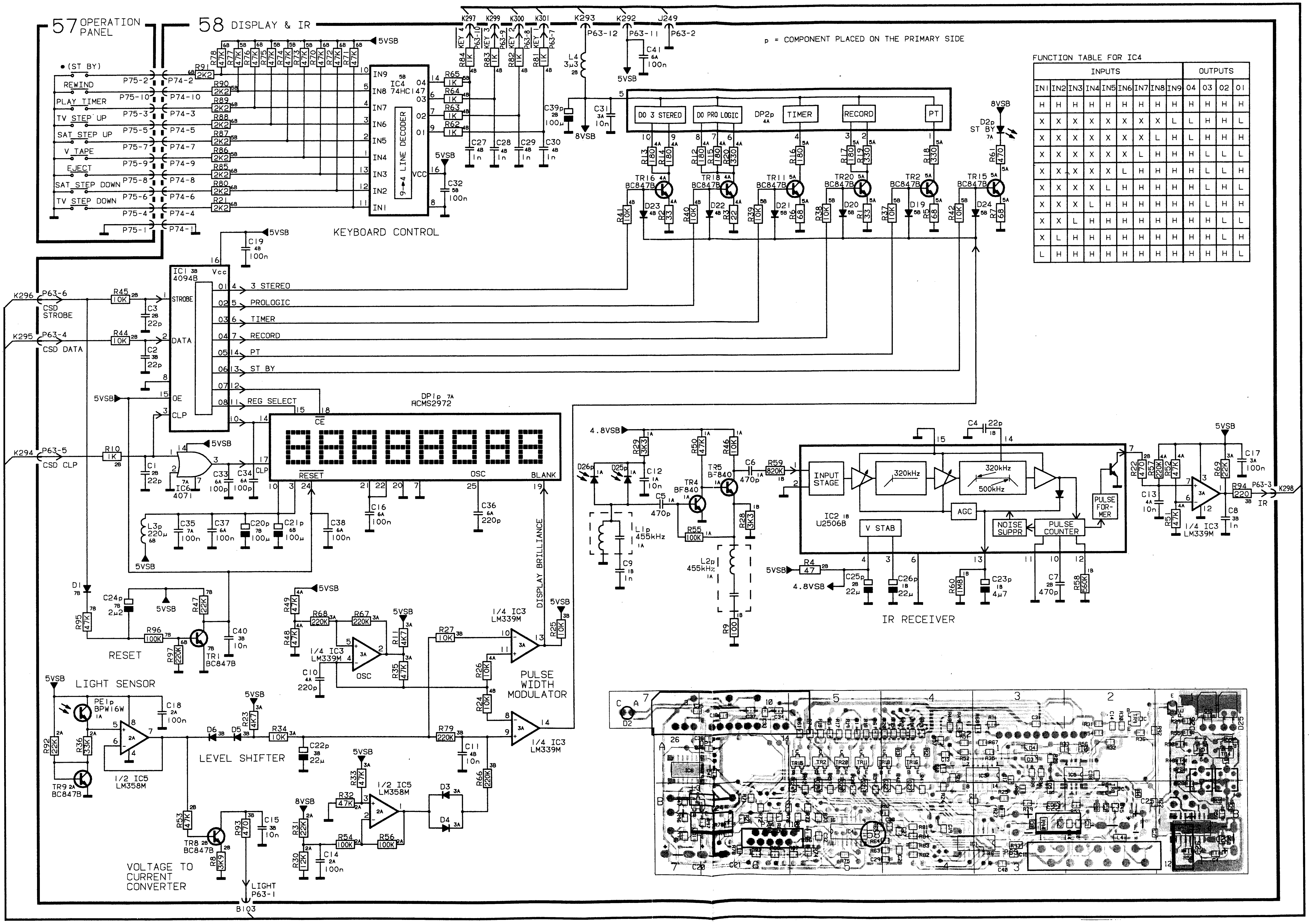

59 CAMCORDER INTERFACE & HEADPHONE
p = COMPONENT PLACED ON THE PRIMARY SIDE
J242
P64-5
14V
L2p 47µ
R16 1K
R3 1K
R2 1K
R1 1K
R71 82
R70 82
D2
TR15p BC327-25
9VC
R8 100
D8 6V2
R5 8K25
C27p 47µ
C5 100n
R77 10K
TR1p BC547B
R17 1K
R65 5K36
J243
P64-6
-10.5V
L1p 47µ
R12 470
R87 470
D1
R4 10
TR14p BC337-25
-9VC
R13 10K
R7 100
D7 6V2
R6 8K25
C26p 47µ
C6 100n
TR12p BC557B
R23 1K2
R64 5K36
POWER SUPPLY
J246 P64-9
J245 P64-13
J244 P64-15
J238
P64-4
HEAD PH DET
R51 100K
9VC
R52 100K
R68 47
1/4 IC1 LF347
-9VC
J247 HP LEFT
P64-10
R81 100
C23p 2µ2
C2 2n2
R36 4K7
R63 100K
R54 100K
LEFT
R49 100K
R50 100K
R69 47
1/4 IC1 LF347
R89 470
R30 470
C19 2n2
PHONES P1
R62 100K
R53 100K
HEADPHONE AMP
R45 100K
R46 100K
R66 47
1/4 IC1 LF347
RIGHT
R88 470
R31 470
C29 2n2
J248 HP RIGHT
P64-11
R80 100
C22p 2µ2
C1 2n2
R35 4K7
R61 100K
R48 100K
R43 100K
R44 100K
R67 47
1/4 IC1 LF347
R60 100K
R47 100K
P3
L
R
VIDEO
S-VHS
Y
C
R90 470
9VC
C30 47µ
C3 1n
R83 47K
C25p 2µ2
R34 33K
R38 47K
R10 220
TR3p BC547B
C8 100n
R78 100
R25 3K3
EXT SOUND L
P64-8
H196
C11 1n
R82 47K
C24p 2µ2
R33 33K
R37 47K
R9 220
TR2p BC547B
C7 100n
R79 100
R24 3K3
EXT SOUND R
P64-7
H197
R18 2K2
R56 220K
C13 100n
D3
D5 5V6
R40 68K
C20 220n
R39 68K
C12 100n
R84 470
TR6p BC547B
R73 75
R21 2K7
C14 100n
TR7p BC547B
EXT CVBS DET
P64-2
J240
EXT CVBS
P64-16
F167
R19 2K2
R57 220K
C17 100n
D4
D6 5V6
R42 68K
C21 220n
R41 68K
C16 100n
R86 470
TR9p BC547B
EXT Y/C DET
P64-1
J241
R74 84R5
R22 2K7
C18 100n
TR10p BC547B
EXT Y
P64-14
F166
TR13p BC557B
R59 100K
R55 100K
R85 470
TR4p BC547B
EXT 16:9 Y/C DET
P64-3
J239
C4 22n
R32 12K
C9 100n
R58 470K
C10 100n
R20 2K7
R72 75
EXT C
P64-12
F165
59
IC1
TR14
TR12
TR15
J30
A
B
C
D
E
F
G

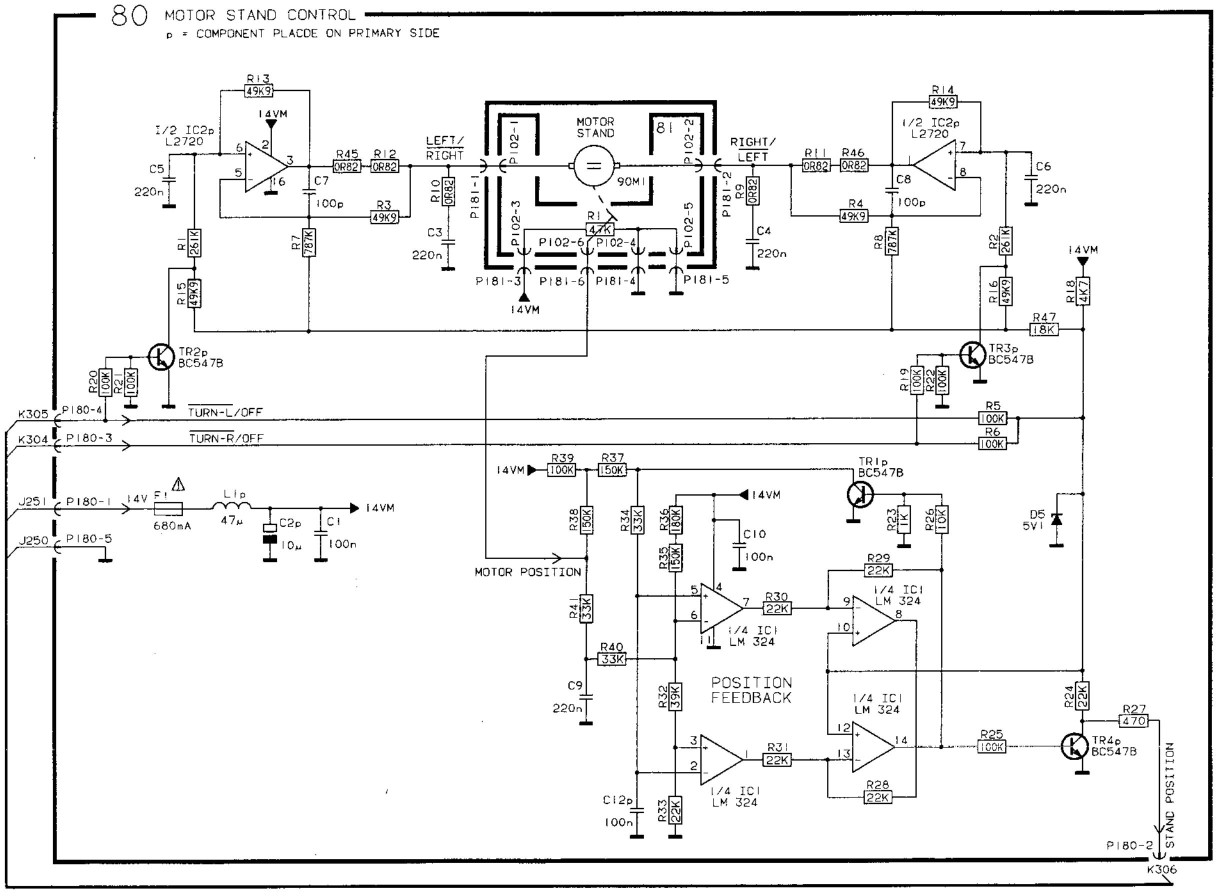
DIAGRAM U DISPLAY & IR

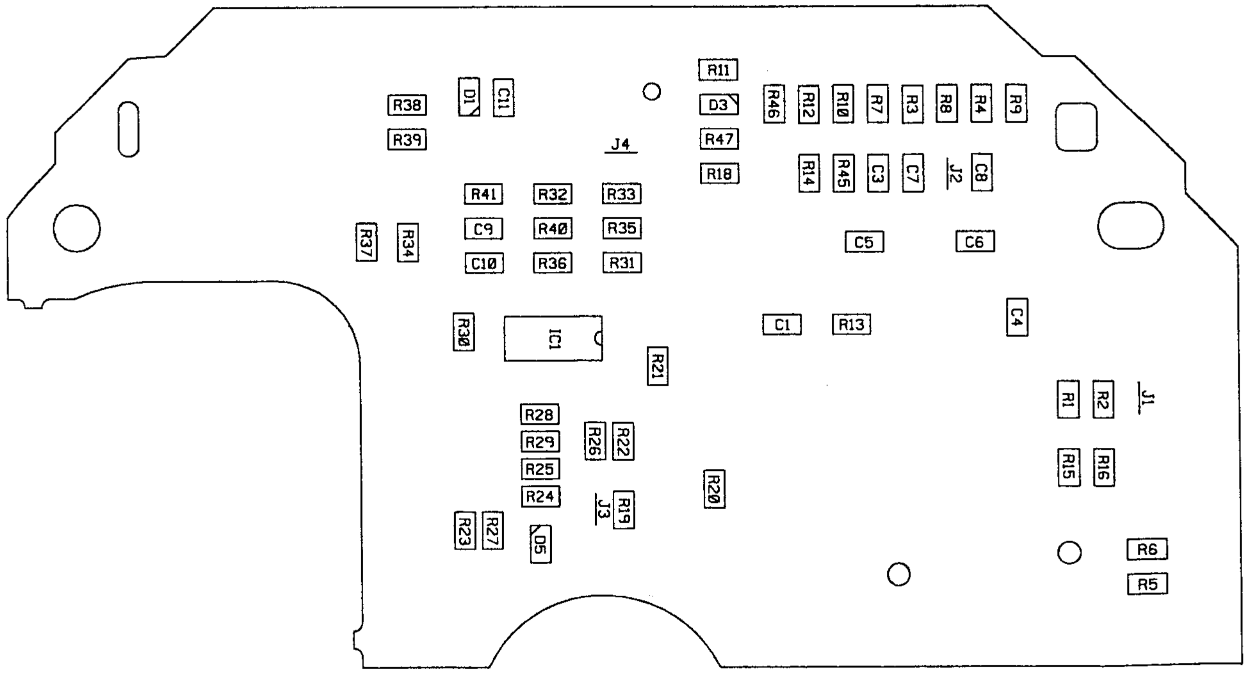

57 OPERATION PANEL
58 DISPLAY & IR
(ST BY)
REWIND
PLAY TIMER
TV STEP UP
SAT STEP UP
V TAPE
EJECT
SAT STEP DOWN
TV STEP DOWN
IC4 74HC147
9→4 LINE DECODER
KEYBOARD CONTROL
p = COMPONENT PLACED ON THE PRIMARY SIDE
DO 3 STEREO
DO PRO LOGIC
DP2p
TIMER
RECORD
PT
ST BY
IC1 4094B
STROBE
DATA
OE
CLP
3 STEREO
PROLOGIC
TIMER
RECORD
PT
ST BY
REG SELECT
CSD STROBE
CSD DATA
CSD CLP
DP1p HCMS2972
CE
RESET
OSC
BLANK
IC6 4071
RESET
TR1 BC847B
LIGHT SENSOR
PE1p BPW16W
1/2 IC5 LM358M
TR9 BC847B
LEVEL SHIFTER
1/4 IC3 LM339M
OSC
DISPLAY BRILLIANCE
PULSE WIDTH MODULATOR
1/2 IC5 LM358M
TR8 BC847B
VOLTAGE TO CURRENT CONVERTER
LIGHT P63-1
B103
INPUT STAGE
320kHz
500kHz
AGC
V STAB
NOISE SUPPR
PULSE COUNTER
PULSE FOR-MER
IC2 U2506B
L1p 455kHz
L2p 455kHz
TR4 BF840
TR5 BF840
IR RECEIVER
IR
K298
P63-3
5VSB
8VSB
4.8VSB

FUNCTION TABLE FOR IC4

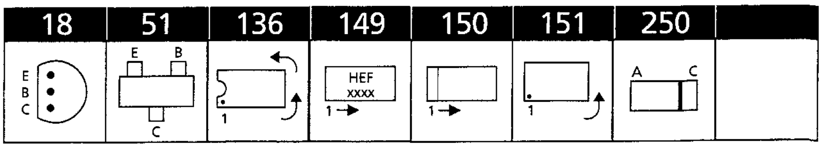
INPUTS									OUTPUTS			
IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN9	04	03	02	01
H	H	H	H	H	H	H	H	H	H	H	H	H
X	X	X	X	X	X	X	X	L	L	H	H	L
X	X	X	X	X	X	X	L	H	L	H	H	H
X	X	X	X	X	X	L	H	H	H	L	L	L
X	X	X	X	X	L	H	H	H	H	L	L	H
X	X	X	X	L	H	H	H	H	H	L	H	L
X	X	X	L	H	H	H	H	H	H	L	H	H
X	X	L	H	H	H	H	H	H	H	H	L	L
X	L	H	H	H	H	H	H	H	H	H	L	H
L	H	H	H	H	H	H	H	H	H	H	H	L

DIAGRAM V MOTOR STAND CONTROL


80 MOTOR STAND CONTROL
p = COMPONENT PLACDE ON PRIMARY SIDE
R13 49K9
1/2 IC2p L2720
14VM
C5 220n
C7 100p
R45 0R82
R12 0R82
R3 49K9
LEFT/ RIGHT
R10 0R82
C3 220n
R1 261K
R7 787K
R15 49K9
TR2p BC547B
R20 100K
R21 100K
P102-1
P102-2
P102-3
P102-4
P102-5
P102-6
P181-1
P181-2
P181-3
P181-4
P181-5
P181-6
MOTOR STAND
90M1
R1 4K7
14VM
RIGHT/ LEFT
R9 0R82
C4 220n
R11 0R82
R46 0R82
R14 49K9
1/2 IC2p L2720
C8 100p
C6 220n
R4 49K9
R8 787K
R2 261K
R16 49K9
14VM
R18 4K7
R47 18K
TR3p BC547B
R19 100K
R22 100K
R5 100K
R6 100K
K305 P180-4 TURN-L/OFF
K304 P180-3 TURN-R/OFF
J251 P180-1 14V
F1 680mA
L1p 47µ
C2p 10µ
C1 100n
14VM
J250 P180-5
14VM
R39 100K
R37 150K
TR1p BC547B
14VM
R38 150K
R34 33K
R36 180K
C10 100n
R23 1K
R26 10K
D5 5V1
R35 150K
MOTOR POSITION
R29 22K
R30 22K
1/4 IC1 LM 324
1/4 IC1 LM 324
R41 33K
R40 33K
POSITION FEEDBACK
C9 220n
R32 39K
1/4 IC1 LM 324
R24 22K
R27 470
R31 22K
R25 100K
TR4p BC547B
1/4 IC1 LM 324
R28 22K
C12p 100n
R33 22K
STAND POSITION
P180-2
K306


R38
R39
D1
C11
R11
D3
R46
R12
R10
R7
R3
R8
R4
R9
J4
R47
R18
R14
R45
C3
C7
J2
C8
R41
R32
R33
R37
R34
C9
R40
R35
C5
C6
C10
R36
R31
R30
IC1
C1
R13
C4
R21
J1
R1
R2
R28
R29
R26
R22
R15
R16
R25
R24
R20
J3
R19
R23
R27
D5
R6
R5

LIST OF ELECTRICAL PARTS



Resistors not referred to are standard, see page 3-22

PCB 1, 8008323 Tuner & IF system B/G (incl. PCB 12)

IC3	8341794	**136**	TDA 8417

TR1	8320552	**18**	BC 327-25	TR11	8320811	**51**	BC 857B
TR5				TR15	8320755	**51**	BC 847B
TR6	8320755	**51**	BC 847B	TR19	8320811	**51**	BC 857B
TR7	8320811	**51**	BC 857B				
TR8-	8320755	**51**	BC 847B				
TR10							

D1-	8300482	**250**	LL 4148	D15	8300482	**250**	LL 4148
D12				D16	8300644	**250**	Z6.2V 2% 0.5W
D13-	8300644	**250**	Z6.2V 2% 0.5W	D19	8300911	**250**	Z33V 2% 0.5W
D14				D22	8300941	**250**	Z2.4V 2% 0.5W

R1	5011633	820Ω 5% 1/4W	R73-	5021074	680Ω 1% 1/4W
R2	5011852	332Ω 1% 1/4W	R74		
R23-	5021225	10KΩ 1% 1/4W	R75	5021334	3.32KΩ 1% 1/4W
R24			R76-	5021371	255Ω 1% 1/4W
R25	5021371	255Ω 1% 1/4W	R77		
R26-	5021508	47KW 1% 1/4W	R78	5021372	5.36KΩ 1% 1/4W
R28			R79	5021494	4.64KΩ 1% 1/4W
R31	5021512	220Ω 1% 1/4W	R90	5021225	10KΩ 1% 1/4W
R34	5021512	220Ω 1% 1/4W	R92	5021074	680Ω 1% 1/4W
R35	5021517	30.9KΩ 1% 1/4W	R96-	5021512	220Ω 1% 1/4W
R52-	5012181	12.1Ω 1% 1/4W	R97		
R53			R98	5021489	22KΩ 1% 1/4W
R55-	5012181	12.1Ω 1% 1/4W	R99-	5021508	47KΩ 1% 1/4W
R57			R102		
R60	5012181	12.1Ω 1% 1/4W	R103-	5021512	220Ω 1% 1/4W
R63	5012181	12.1Ω 1% 1/4W	R104		
R65	5012181	12.1Ω 1% 1/4W	R110	5021516	18.7KΩ 1% 1/4W
R71	5012209	1.87KΩ 1% 1/4W			

C2	4000404	22pF 5% 50V	C31-	4010314	220nF -20+80% 25V
C5	4000400	10pF 5% 50V	C32		
C6	4010274	100nF -20+80% 25V	C33-	4200824	22μF 20% 50V
C7	4200824	22μF 20% 50V	C34		
C8	4201171	1μF 20% 50V	C39	4200628	100μF 20% 16V
C9	4000400	10pF 5% 50V	C40	4200688	47μF 20% 50V
C10	4010216	22nF 10% 100V	C42	4010314	220nF -20+80% 25V
C12	4010216	22nF 10% 100V	C45	4200824	22μF 20% 50V
C20	4010273	47nF -20+80% 50V	C61	4010274	100nF -20+80% 25V
C21	4010263	2.2nF 10% 50V			

L2-	8020916	Coil 47μH 450mA	L98-	8021082	Coil 8.2μH 10%
L3			L99		
L4	8021077	Coil 0.47μH 10%			

TU1	8050148	Tuner UV 916mA

X10	8090105	Crystal 10.0MHz

P27-	7229141	Holder f/ribbon cable	P89	7221046	Plug 6/6 pole
P28		10 pole	P92	7500296	Contact pin
P72	7221121	Plug 16/16 pole			

PCB 1, 8008324 Tuner & IF system I (incl. PCB 12)

IC2Δ	8341072	**149**	4053				

TR13-TR14	8320755	**51**	BC 847B	TR17	8320811	**51**	BC 857B

D26	8300644	**250**	Z6.2V 2% 0.5W

C1	4010265	3.3nF 5% 50V	C35	4201174	2.2µF 20% 50V
C22	4010274	100nF -20+80% 25V	C37	4200525	22µF 20% 10V
C28	4200824	22µF 20% 50V	C41	4200824	22µF 20% 50V

Other electrical parts like PCB 1, Tuner & IF system B/G

PCB 1, 8008327 Tuner & IF system B/G/L/L' (incl. PCB 12)

C30	4010314	220nF -20+80% 25V
L97	8021080	Coil 3.9µH 10%
BP4	8030242	Cer. filter 6.5MHz

Other electrical parts like PCB 1, Tuner & IF system B/G

PCB 1, 8008326 Tuner & IF system B/G/L/L'/I (incl. PCB 12)

C41	4200824	22µF 20% 50V
L97	8021080	Coil 3.9µH 10%
BP4	8030242	Cer. filter 6.5MHz

Other electrical parts like PCB 1, Tuner & IF system B/G

PCB 1, 8008325 Tuner & IF system B/G/D/K/M/I (incl. PCB 12)

TR13	8320755	**51**	BC 847B	TR17	8320811	**51**	BC 857B

C1	4010265	3.3nF 10% 50V	C37	4200525	22µF 20% 10V
C30	4010314	220nF -20+80% 25V	C41	4200824	22µF 20% 50V

Other electrical parts like PCB 1, Tuner & IF system B/G

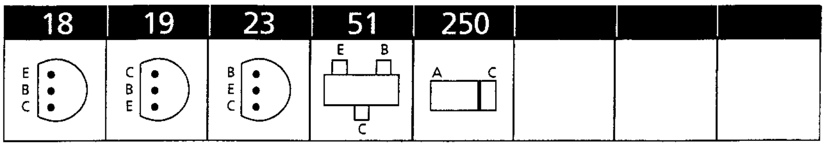
PCB 2, 8008363 Video/Chroma & Teletext (incl. PCB 41)

IC1Δ	8341025	**149**	4094	IC7Δ	8342193	**136**	TDA 9162
IC2	8341933	**136**	TDA 4565	IC8	8341033	**149**	LF 353
IC3Δ	8342343	**150**	TDA 4661	IC9	8341041	**150**	LM 324
IC4	8341708	**136**	TDA 4780	IC10	8341857	**151**	LM 339
IC6Δ	8342361	**136**	SDA 5273	IC11Δ	8341025	**149**	4094

TR1	8320497	**18**	BC 547B	TR17-TR18	8320755	**51**	BC 847B
TR2	8320755	**51**	BC 847B	TR19-TR22	8320497	**18**	BC 547B
TR3	8320740	**51**	BF 840	TR23-TR32	8320755	**51**	BC 847B
TR4-TR7	8320755	**51**	BC 847B	TR33-TR35	8320811	**51**	BC 857B
TR8-TR9	8320497	**18**	BC 547B	TR36	8320503	**18**	BC 557B
TR10	8320740	**51**	BF 840	TR37	8320811	**51**	BC 857B
TR11-TR13	8320755	**51**	BC 847B	TR38	8320503	**18**	BC 557B
TR14	8320497	**18**	BC 547B	TR39	8320497	**18**	BC 547B
TR15	8320755	**51**	BC 847B	TR40	8320755	**51**	BC 847B
TR16	8320497	**18**	BC 547B				

Δ indicates that static electricity may destroy the component

⇨



Resistors not referred to are standard, see page 3-22

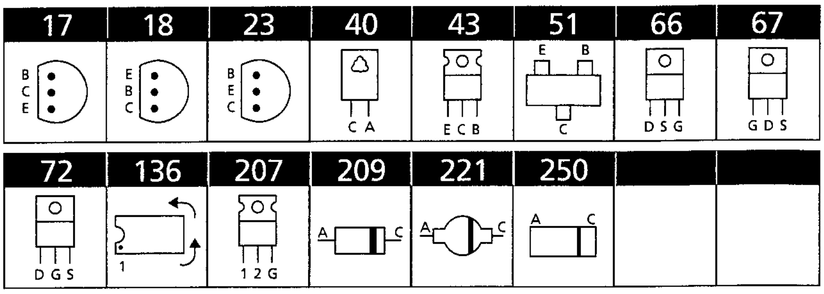
TR41	8320497	**18**	BC 547B	TR58-	8320567	**23**	BF 450
TR42-	8320755	**51**	BC 847B	TR59			
TR43				TR60-	8320740	**51**	BF 840
TR44-	8320552	**18**	BC 327-25	TR61			
TR46				TR62	8320811	**51**	BC 857B
TR47	8320755	**51**	BC 847B	TR63	8320755	**51**	BC 847B
TR48-	8320740	**51**	BF 840	TR64-	8320497	**18**	BC 547B
TR49				TR65			
TR50	8321072	**19**	ZTX 690B	TR66	8320811	**51**	BC 857B
TR51-	8320755	**51**	BC 847B	TR67	8320503	**18**	BC 557B
TR54				TR68	8320740	**51**	BF 840
TR55-	8320552	**18**	BC 327-25	TR69	8320755	**51**	BC 847B
TR56				TR70	8320552	**18**	BC 327-25
TR57	8320811	**51**	BC 857B	TR71	8320811	**51**	BC 857B

D1-	8300482	**250**	LL 4148	D32	8300482	**250**	LL 4148
D4				D33	8300644	**250**	Z6.2V 2% 0.5W
D5	8300606	**250**	LL 4448	D34	8300772	**250**	Z24V 5% 0.4W
D6	8300635	**250**	BA 683	D35	8300562	**250**	Z5.6V 2% 0.5W
D7-	8300482	**250**	LL 4148	D36	8300774	**250**	5.1V 5% 0.5W
D18				D37-	8300606	**250**	LL 4448
D19	8300635	**250**	BA 683	D40			
D20-	8300482	**250**	LL 4148	D41-	8300636	**250**	Z7.5V 5% 0.5W
D21				D42			
D22	8300644	**250**	Z6.2V 2% 0 .5W	D43-	8300606	**250**	LL 4448
D23	8300563	**250**	Z5.1V 2% 0.5W	D46			
D24-	8300644	**250**	Z6.2V 2% 0.5W	D47-	8300636	**250**	Z7.5V 5% 0.5W
D25				D48			
D26	8300762	**250**	Z9.1V 2% 0.5W	D49-	8300482	**250**	LL 4148
D27	8300635	**250**	BA 683	D51			
D28-	8300482	**250**	LL 4148	D52	8300606	**250**	LL 4448
D29							
D30-	8300635	**250**	BA 683				
D31							

R10	5021501	390Ω 1% 1/4W	R265	5012242	47KΩ 1% 1/10W
R18	5011903	180Ω 1% 1/4W	R266	5012239	39KΩ 1% 1/10W
R23	5011842	1.05KΩ 1% 1/8W	R267	5011983	324Ω 1% 1/8W
R24	5011859	8.25KΩ 1% 1/4W	R268-	5021511	470Ω 1% 1/4W
R29	5021511	470Ω 1% 1/4W	R270		
R30	5011557	10KΩ 1% 1/8W	R271	5012131	316Ω 1% 1/8W
R31	5021074	680Ω 1% 1/4W	R273-	5021226	100KΩ 1% 1/4W
R32-	5011631	1KΩ 1% 1/4W	R275		
R33			R276	5012230	1KΩ 1% 1/10W
R34	5011912	1.2KΩ 1% 1/8W	R278	5012131	316Ω 1% 1/8W
R136	5021511	470Ω 1% 1/4W	R279	5012331	10KΩ 1% 1/10W
R155	5012297	5.62KΩ 1% 1/10W	R280	5021484	100Ω 1% 1/4W
R160	5012297	5.62KΩ 1% 1/10W	R281-	5012131	316Ω 1% 1/8W
R166	5012332	4.7KΩ 1% 1/10W	R282		
R181	5012361	1.5KΩ 1% 1/10W	R283-	5021484	100Ω 1% 1/4W
R198	5021484	100Ω 1% 1/4W	R284		
R210	5012218	11.8KΩ 1% 1/10W	R285	5021511	470Ω 1% 1/4W
R211-	5012240	100KΩ 1% 1/10W	R286	5021484	100Ω 1% 1/4W
R212			R287-	5021074	680Ω 1% 1/4W
R222	5012223	4.64KΩ 1% 1/8W	R288		
R224	5012309	5.36KΩ 1% 1/10W	R289	5021226	100KΩ 1% 1/4W
R252	5012365	11KΩ 1% 1/10W	R291	5011631	1KΩ 1% 1/4W
R255	5012331	10KΩ 1% 1/10W	R292-	5021512	220Ω 1% 1/4W
R258	5012298	22KΩ 1% 1/10W	R295		
R262	5012242	47KΩ 1% 1/10W	R296	5012217	150KΩ 1% 1/10W
R263-	5012161	3.9KΩ 1% 1/8W	R299	5021494	4.64KΩ 1% 1/4W
R264			R302	5021484	100Ω 1% 1/4W

R303	5021226	100KΩ 1% 1/4W
R304	5012350	27.4KΩ 1%1/10W
R306	5021226	100KΩ 1% 1/4W
R307-	5021512	220Ω 1% 1/4W
R308		

C1	4000412	100pF 5% 50V
C2	4000400	10pF 5% 50V
C3-	4000412	100pF 5% 50V
C4		
C5	4000219	10pF ±0.5pF 50V
C6-	4000404	22pF 5% 50V
C7		
C8	4000219	10pF ±0.5pF 50V
C9	4000410	68pF 5% 50V
C10	4000219	10pF ±0.5pF 50V
C11	4010316	100nF 10% 25V
C12	4010314	220nF -20+80% 25V
C13	4000412	100pF 5% 50V
C14-	4000411	82pF 5% 50V
C15		
C16-	4000412	100pF 5% 50V
C18		
C19-	4000420	470pF 5% 50V
C20		
C21	4000416	220pF 5% 50V
C22	4010274	100nF -20+80% 25V
C23	4000420	470pF 5% 50V
C24	4000406	33pF 5% 50V
C25	4000413	120pF 5% 50V
C26	4000416	220pF 5% 50V
C27	4010274	100nF -20+80% 25V
C28	4000406	33pF 5% 50V
C29-	4000422	680pF 5% 50V
C31		
C32	4130070	1µF 10% 50V
C33	4010274	100nF -20+80% 25V
C34	4100237	2.2nF 5% 63V
C35-	4010274	100nF -20+80% 25V
C36		
C37	4010272	22nF -20+80% 50V
C38	4000420	470pF 5% 50V
C39	4010272	22nF -20+80% 50V
C40-	4000290	22nF 10% 50V
C42		
C43	4010274	100nF -20+80% 25V
C44-	4010272	22nF -20+80% 50V
C45		
C46	4010274	100nF -20+80% 25V
C47	4000413	120pF 5% 50V
C48	4010271	10nF 10% 50V
C49	4000420	470pF 5% 50V
C50-	4010220	100nF 10% 50V
C51		
C52-	4010274	100nF -20+80% 25V
C60		
C61	4000420	470pF 5% 50V
C62	4010314	220nF -20+80% 25V
C63	4010274	100nF -20+80% 25V
C64	4010220	100nF 10% 50V
C65	4000287	220nF -20+80% 25V
C66-	4010314	220nF -20+80% 25V
C67		
C68-	4000287	220nF -20+80% 25V
C70		
C71	4130070	1µF 10% 50V
C72-	4010316	100nF 10% 25V
C75		
C76	4130070	1µF 10% 50V
C77	4000287	220nF -20+80% 25V
C78	4000420	470pF 5% 50V
C79	4010316	100nF 10% 25V
C80	4010314	220nF -20+80% 25V
C81	4200628	100µF 20% 16V
C82-	4130236	330nF 20% 63V
C83		
C84	4000402	15pF 5% 50V
C85	4100301	1nF 2.5% 63V
C86	4201173	10µF 20% 50V
C87	4000420	470pF 5% 50V
C88	4201256	470µF 20% 25V
C89	4201329	1000µF 20% 16V
C90	4200403	100µF 20% 25V
C91	4010274	100nF -20+80% 25V
C92-	4200508	22µF 20% 25V
C93		
C94	4201173	10µF 20% 50V
C95	4010314	220nF -20+80% 25V
C96	4201173	10µF 20% 50V
C97	4010314	220nF -20+80% 25V
C98	4200628	100µF 20% 16V
C99	4000402	15pF 5% 50V
C100	4201173	10µF 20% 50V
C101	4000234	47pF 5% 50V
C102	4201171	1µF 20% 50V
C103	4200512	1µF 20% 50V
C104	4201171	1µF 20% 50V
C105	4200672	22µF 20% 16V Bipolar
C106	4130313	470nF 20% 63V
C107	4201170	0.47µF 20% 50V
C108-	4201171	1µF 20% 50V
C109		
C110	4000402	15pF 5% 50V
C111	4000412	100pF 5% 50V
C112	4000416	220pF 5% 50V
C113	4000412	100pF 5% 50V
C114	4000416	220pF 5% 50V
C115	4100238	3.3nF 5% 63V
C116	4130328	33nF 5% 63V
C117	4010265	3.3nF 10% 50V
C118	4200508	22µF 20% 25V
C119	4010274	100nF -20+80% 25V
C120	4010271	10nF 10% 50V
C121	4010274	100nF -20+80% 25V
C122	4010314	220nF -20+80% 25V
C123	4010274	100nF -20+80% 25V
C124	4201256	470µF 20% 25V
C125	4130266	82nF 5% 63V
C126	4130267	18nF 5% 63V
C127-	4010340	150nF 10% 25V
C128		
C129	4201256	470µF 20% 25V
C130	4201171	1µF 20% 50V
C131	4200508	22µF 20% 25V
C132	4000408	47pF 5% 50V
C133	4201173	10µF 20% 50V
C134-	4201171	1µF 20% 50V
C135		
C136	4200688	47µF 20% 50V
C137	4000408	47pF 5% 50V
C138	4010316	100nF 10% 25V
C139	4000416	220pF 5% 50V
C140	4100301	1nF 2.5% 63V
C141	4200403	100µF 20% 25V
C142-	4010274	100nF -20+80% 25V
C143		



Resistors not referred to are standard, see page 3-22

L1	8020749	Coil 10µH	L7	8021081	Coil 4.7µH 10%
L2-	8021083	Coil 3.3µH 10%	L8	8020916	Coil 47µH 5% 450mA
L4			L9	8020851	Coil 560µH 10%
L5-	8020916	Coil 47µH 5% 450mA	L10	8021089	Coil 8.2µH 10%
L6					

X1	8090197	Crystal 4.433619MHz	X3	8090186	Crystal 20.48MHz
X2	8090198	Crystal 3.579545MHz			

P29-	7229141	Holder f/ribbon cable	P34	7221133	Socket 8/8 pole
P33		10 pole	P35	7221121	Socket 16/16 pole

PCB 3, 8008364 Video Output

TR1-	8320961	**17**	BF 421	TR51	8320497	**18**	BC 547B
TR3				TR52	8320503	**18**	BC 557B
TR4-	8320962	**43**	BF 871	TR53	8321115	**43**	BD 830
TR6				TR54	8321114	**43**	BD 829
	3358282		Heat sink	TR55	8320755	**51**	BC 847B
			f/TR4-6	TR56	8320811	**51**	BC 857B
	3152902		Holder f/TR4-6				

D1-	8300865	**209**	BAV 21	D51-	8300606	**250**	LL 4448
D4				D52			
D5-	8300058	**209**	1N 4148	D53	8300058	**209**	1N 4148
D16				D54-	8300482	**250**	LL 4148
D19-	8300058	**209**	1N 4148	D58			
D21							

R1-	5021395	8.2KΩ 5% 3W	R60-	5021225	10KΩ 1% 1/4W
R3			R61		
R10-	5001167	2.2KΩ 10% 1/2W	R69-	5011631	1KΩ 1% 1/4W
R12			R70		
R18	5020345	47Ω 10% 0.3W	R73-	5021490	28Ω 1% 1/4W
R19	5010806	1.2KΩ 5% 1/3W	R74		
R52	5021225	10KΩ 1% 1/4W	R76	5020345	47Ω 10% 0.3W
R54	5021225	10KΩ 1% 1/4W			

C1-	4000153	33pF 5% 50V	C55-	4130070	1µF 10% 50V
C3			C56		
C4	4130098	100nF 20% 400V	C57	4130306	100nF 10% 63V
C5	4010211	2.2nF -0+100% 2000V	C59-	4200628	100µF 20% 16V
C6	4200515	4.7µF 20% 25V	C60		
C7	4130308	220nF 10% 63V	C61	4201309	100µF 20% 63V
C51-	4130230	100nF 20% 63V	C62	4200510	10µF 20% 16V
C52			C63	4010220	100nF 10% 50V
C53-	4010220	100nF 10% 50V			
C54					

L1	8020590	Coil 270µH 10%

P10	7200119	Socket picture tube	P40	7221043	Plug 3/3 pole
P37	7221133	Plug 8/8 pole	P70	7500152	Contact pin
P38	7221079	Plug 7/7 pole			

PCB 4, 8008365 Power Supply

IC1-	8330297	**136**	CNY 17F2ZW	IC3	8330234	**136**	CNY 17-2ZW
IC2							

TR02	8320503	**18**	BC 557B	TR84	8320503	**18**	BC 557B
TR03	8320497	**18**	BC 547B	TR85	8320552	**18**	BC 327-25
TR41Δ	8321078	**72**	STH 7N90FI	TR86	8320497	**18**	BC 547B
	2816154		Spring clip	TR91-	8320497	**18**	BC 547B
TR51	8320503	**18**	BC 557B	TR92			
TR52	8320497	**18**	BC 547B	TR93	8320503	**18**	BC 557B
TR53	8320503	**18**	BC 557B	TR111Δ	8320946	**67**	IRF Z24
TR61	8320497	**18**	BC 547B	TR122Δ	8320853	**66**	IRF 624
TR62	8320503	**18**	BC 557B	TR124	8320497	**18**	BC 547B
TR63	8320625	**23**	BF 240	TR141	8320503	**18**	BC 557B
TR81	8320503	**18**	BC 557B	TR142	8320497	**18**	BC 547B
TR82-	8320497	**18**	BC 547B	TR161	8320497	**18**	BC 547B
TR83				TR162	8320503	**18**	BC 557B

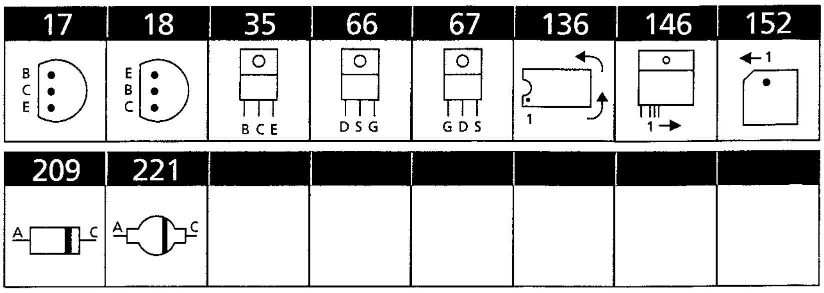
D1	8300901		Bridge	D113	8300058	**209**	1N 4148
D3	8300201	**209**	Z6.2V 5% 0.4W	D114	8300310	**209**	Z10V 5% 0.4W
D15	8300058	**209**	1N 4148	D121	8300776	**40**	BYW 29F
D41-	8300902	**221**	BYV 26C		2816195		Spring clip
D42				D122	8300058	**209**	1N 4148
D43-	8300675	**209**	BYV 26B	D123	8300671	**209**	RGP 10B
D44				D124	8300058	**209**	1N 4148
D51	8300671	**209**	RGP 10B	D125	8300310	**209**	Z10V 5% 0.4W
D61	8300058	**209**	1N 4148	D127	8300310	**209**	Z10V 5% 0.4W
D81-	8300058	**209**	1N 4148	D141	8300310	**209**	Z10V 5% 0.4W
D83				D142-	8300058	**209**	1N 4148
D92-	8300058	**209**	1N 4148	D143			
D93				D144	8300903	**209**	Z6.2V 1%
D101	8300784	**221**	BYW 96D	D162	8300058	**209**	1N 4148
D102	8300670	**221**	BYV 26D	D163	8300201	**209**	Z6.2V 5% 0.4W
D103	8300671	**209**	RGP 10B	D164	8300058	**209**	1N 4148
D111	8300388	**209**	RGP 30P				
D112	8300776	**40**	BYW 29F				
	2816195		Spring clip				

ST51	8300320	**207**	BTB 06

R9	5011209	10MΩ 5% 1/2W	R144	5020183	464Ω 1% 1/4W
R10	5011378	0.82Ω 5% 1/4W	R148	5021186	442Ω 1% 1/4W
R51	5230030	PTC 18+3000Ω 265V	R150	5021480	305KΩ 0.25% 1/4W
R59	5020714	0.1Ω 10% 0.4W	R151	5021481	15KΩ 0.25% 1/4W
R103	5020714	0.1Ω 10% 0.4W			

C1	4130169	47nF 20% 250V	C93	4010105	1nF 10% 50V
C4	4201273	150µF 20% 450V	C94	4000204	100pF 5% 63V
C5-	4010240	2.2nF 20% 400V	C95	4010101	4.7nF 10% 50V
C6			C101-	4010104	220pF 10% 500V
C7	4130169	47nF 20% 250V	C102		
C20	4201173	10µF 20% 50V	C103	4201274	100µF 20% 385V
C42-	4010104	220pF 10% 500V	C104	4130523	15nF 20% 250V
C43			C105	4200704	470µF 20% 25V
C44	4130570	4.7nF 20% 1000V	C106	4010105	1nF 10% 50V
C45	4010106	10nF -20+80% 40V	C111	4130230	100nF 20% 63V
C49	4010346	100pF 10% 2KV	C112	4201300	470µF 20% 63V
C50	4010105	1nF 10% 50V	C113	4010105	1nF 10% 50V
C51	4130098	100nF 20% 400V	C114	4200612	1000µF -20+50% 25V
C52	4130304	22nF 10% 63V	C115	4200688	47µF 20% 50V
C53	4130230	100nF 20% 63V	C121	4010105	1nF 10% 50V
C54	4200688	47µF 20% 50V	C122	4200612	1000µF -20+50% 25V
C55	4200628	100µF 20% 16V	C123	4201328	3300µF 20% 16V
C61	4010328	470pF 10% 1KV	C124	4130230	100nF 20% 63V
C62	4100235	680pF 5% 63V	C125-	4010105	1nF 10% 50V
C63	4130230	100nF 20% 63V	C126		
C82	4000168	120pF 5% 63V	C141	4000153	33pF 5% 50V
C83	4201173	10µF 20% 50V	C142	4200517	2.2µF 20% 50V
C84	4100236	1nF 5% 63V	C161	4200517	2.2µF 20% 50V
C91	4010106	10nF -20+80% 40V			

Δ indicates that static electricity may destroy the component



Resistors not referred to are standard, see page 3-22

L41	8022347	Coil 260µH	L91	6850209	Coil 0.5µH
L42	8020551	Coil 4.7µH 10%	L101	8021015	Coil 1µH 10%
L51	8020912	Coil 100µH 10%			

FE2	6710036	Ferrit core	FE6-	6710036	Ferrit core
FE3-	6710034	Ferrit core	FE7		
FE4			FE8	6710031	Ferrit core
FE5	6710031	Ferrit core			

T1	8014139	Transformer

P41-	7229141	Holder f/ribbon cable	P44	7221044	Plug 4/4 pole
P42		10 pole	P45	7211101	Plug 4 pole
P43	7221046	Plug 6/6 pole	P46	7221057	Plug 2/3 pole

PCB 5, 8008366 Deflection & EHT

IC1	8340157	**136**	LM 324
IC2	8340794	**146**	TDA 8172
	2816195		Spring clip

TR1-	8320497	**18**	BC 547B	TR10Δ	8321100	**67**	IRF 740FI
TR3					2816195		Spring clip
TR4	8320552	**18**	BC 327-25	TR11	8321102	**35**	BU 2508AX
TR5	8320497	**18**	BC 547B		2816154		Spring clip
TR6	8320503	**18**	BC 557B	TR12Δ	8320853	**66**	IRF 624
TR7	8320497	**18**	BC 547B	TR13	8320505	**17**	BF 422
TR8-	8320503	**18**	BC 557B	TR14	8320507	**18**	BC 337-25
TR9				TR15	8320497	**18**	BC 547B

D1-	8300058	**209**	1N 4148	D53	8300304	**221**	BY 228
D5				D54	8300310	**209**	Z10V 5% 0.4W
D6-	8300518	**209**	BA 157	D55-	8300058	**209**	1N 4148
D7				D56			
D8-	8300058	**209**	1N 4148	D71-	8300943	**221**	BYW 95C
D10				D73			
D11	8300518	**209**	BA 157	D74	8300023	**209**	1N 4002
D12-	8300058	**209**	1N 4148	D75-	8300058	**209**	1N 4148
D13				D76			
D14	8300310	**209**	Z10V 5% 0.4W	D77-	8300671	**209**	RGP 10B
D21	8300671	**209**	RGP 10B	D78			
D50	8300304	**221**	BY 228				
D51-	8300943	**221**	BYW 95C				
D52							

R11	5020228	8.87KΩ 1% 1/4W	R64	5021300	0.22Ω 5% 1/4W
R25	5020183	464Ω 1% 1/4W	R75	5021299	0.47Ω 5% 1/4W
R50	5390033	100MΩ	R101	5020288	1MΩ 1% 1/4W
R53	5021300	0.22Ω 5% 1/4W	R103	5021300	0.22Ω 5% 1/4W

C1	4010345	470pF 10% 50V	C4	4010400	1nF 10% 50V
C2	4010344	220pF 10% 50V	C5	4010344	220pF 10% 50V
C3	4010345	470pF 10% 50V	C6	4010401	2.2nF 10% 50V

Δ indicates that static electricity may destroy the component

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C7	4010402	4.7nF 10% 50V
C8	4010401	2.2nF 10% 50V
C9	4010402	4.7nF 10% 50V
C10	4010404	22nF -20+80% 50V
C11	4201311	22µF 20% 100V
C12	4010346	100pF 10% 2KV
C13	4130575	3.9nF 5% 2000V
C14	4010346	100pF 10% 2KV
C15- C16	4010400	1nF 10% 50V
C17	4130230	100nF 20% 63V
C18	4130475	1µF 10% 250V
C19	4201173	10µF 20% 50V
C20	4010404	22nF -20+80% 50V
C21	4200368	100µF 20% 63V
C22	4010400	1nF 10% 50V
C23	4010402	4.7nF 10% 50V
C24	4130233	220nF 20% 63V
C25	4010106	10nF -20+80% 40V
C52	4130576	3.3nF 5% 630V
C53	4130577	10nF 5% 2000V
C54	4130578	27nF 5% 400V
C55	4010402	4.7nF 10% 50V
C56	4130581	470nF 5% 250V
C57	4130580	220nF 5% 250V
C58	4010347	1nF 10% 500V
C59	4130581	470nF 5% 250V
C62	4130601	1µF 5% 100V
C63	4130309	330nF 10% 63V
C64	4010403	10nF -20+80% 50V
C71- C73	4200704	470µF 20% 25V
C74	4200368	100µF 20% 63V
C75	4200512	1µF 20% 50V
C76- C78	4130233	220nF 20% 63V
C83	4010401	2.2nF 10% 50V
C84	4200704	470µF 20% 25V
C85	4010402	4.7nF 10% 50V
C86	4200368	100µF 20% 63V
C87	4010343	150pF 10% 50V
C88	4130596	15nF 20% 400V

L1	8020666	Coil 2.7µH 5%
L2	8020916	Coil 47µH 5% 450mA
L49	8021088	Coil 47µH 1.8A
L50	8020901	Coil 10mH 10% 70mA
L52	8024056	Coil
L53	8024058	Coil 900µH/UU15
L54	8024057	Coil 9mH/U15

T1	8014136	Transformer EHT
T2	8014138	Transformer 12mH

S7	7400425	Switch 3 pole

P47- P48	7229141	Holder f/ribbon cable 10 pole
P49	7221046	Socket 6/6 pole
P50	7221079	Socket 7/7 pole
P51	7221046	Socket 6/6 pole
P73	7221043	Socket 3/3 pole

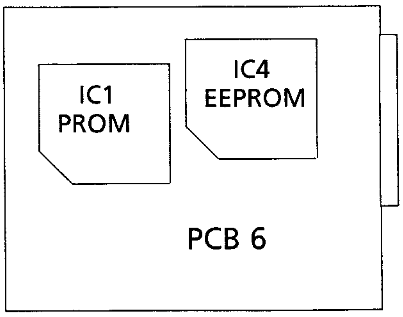
PCB 6, 8008368
Main Microcomputer

IC1*	8342566	**152** 27C040
IC4	8341576	**152** EEPROM 28C64

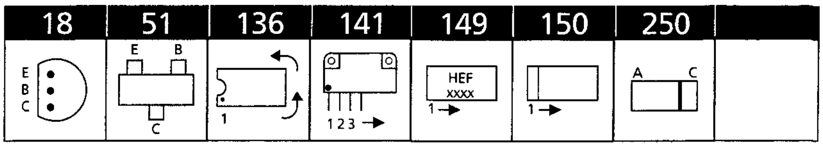
EEPROM 6IC4
The following general data is stored in the EEPROM (6IC4):

- Program nos. (tuning data)
- Teletext memory (teletext pages per program no.)
- Preset values for sound and picture
- Timer Record data
- Timer Play data
- Geometry adjustment data
- Various setup data

When replacing 6IC4 all data will be lost. Concerning adjustment data and presetvalues, some default values are stored in the PROM IC (6IC1).
When replacing the electrical chassis PCB6 or PCB14 where PCB6 is mounted, the EEPROM should be moved to the new PCB to avoid loss of data.



** Specially selected or adapted sample*



Resistors not referred to are standard, see page 3-22

PCB 10, 8008369 Sound Output

IC1	8350088	**141**	STK 4122-2

TR1	8320497	**18**	BC 547B	TR5-	8320755	**51**	BC 847B
TR2	8320503	**18**	BC 557B	TR8			
TR3-	8320993	**51**	FMMT 589TA	TR9-	8320811	**51**	BC 857B
TR4				TR11			

D1	8300482	**250**	LL 4148	D10-	8300772	**250**	Z24V 5% 0.4W
D3-	8300482	**250**	LL 4148	D11			
D5							
D8-	8300605	**250**	Z10V 5% 0.5W				
D9							

R55	5020159	100Ω 10% 0.3W	R58-	5370402	2.2KΩ 30% 0.3W
R56-	5021301	10KΩ 1% 1/8W	R59		
R57			R500	8008151	NTC resistor

C1	4010267	4.7nF 10% 50V	C21	4200672	22µF 20% 16V Bipolar
C2-	4010263	2.2nF 10% 50V	C22	4200510	10µF 20% 16V
C5			C23-	4200688	47µF 20% 50V
C6-	4010271	10nF 10% 50V	C24		
C7			C25-	4201173	10µF 20% 50V
C8-	4010274	100nF -20+80% 25V	C27		
C9			C28	4201264	100µF 20% 50V
C10-	4130233	220nF 20% 63V	C29-	4201295	3300µF 20% 40V
C13			C30		
C14	4130313	470nF 20% 63V	C31	4201143	10µF 20% 25V Bipolar
C15-	4200510	10µF 20% 16V	C32	4010271	10nF 10% 50V
C16			C33-	4010274	100nF -20+80% 25V
C17-	4200617	47µF 20% 10V	C34		
C18					
C19-	4200517	2.2µF 20% 50V			
C20					

L1-	8021031	Coil 47µH 1.4A
L2		

FE1	6710033	Ferrite core

P57	7221044	Socket 4/4 pole	P77-	7221044	Plug 4/4 pole
P58	7221126	Socket 3 pole	P78		
P60	7220206	Socket 5/4 pole			

PCB 11, 8008370
Cross Over Network

IC1-	8341022	**150**	4558	IC6	8341033	**149**	LF 353
IC5							

TR1-	8320755	**51**	BC 847B
TR2			

D1	8300482	**250**	LL 4148

R41	5210017	LDR/LED Opto

C1-	4010157	10nF 10% 50V	C24	4130265	10nF 10% 63V
C2			C25-	4130306	100nF 10% 63V
C3-	4010173	4.7nF 10% 50V	C26		
C7			C27	4130307	150nF 10% 63V
C8	4000345	1.0nF 5% 50V	C28-	4130308	220nF 10% 63V
C9-	4010274	100nF -20+80% 25V	C32		
C20			C33	4130313	470nF 20% 63V
C21	4130240	47nF 10% 63V	C34	4130399	1µF 10% 63V

P79-	7211084	Socket 4/4 pole
P80		

PCB 12, 8008328 IF System B/G

IC1Δ	8341025	**150**	4094	IC4Δ	8342357	**136**	TDA 9815

D26	8300606	**250**	LL 4448

R112	5370455	5KΩ 20%	R113	5370457	470Ω 20%

C5	4010271	10nF 10% 50V	C26	4010312	39nF 10%
C6	4010267	4.7nF 10% 50V	C27	4010274	100nF -20+80% 25V
C7	4010271	10nF 10% 50V	C29	4201219	22µF 20% 10V
C13	4010271	10nF 10% 50V	C36	4201219	22µF 20% 10V
C16-	4010271	10nF 10% 50V	C50	4000505	2.2pF ±0.25pF 50V
C17			C52-	4200847	2.2µF 20% 50V
C18	4010334	220nF 10% 16V	C53		
C19	4010271	10nF 10% 50V	C55-	4000412	100pF 5% 50V
C23	4010274	100nF -20+80% 25V	C56		
C24	4200847	2.2µF 20% 50V	C57	4010271	10nF 10% 50V
C25	4010334	220nF 10% 16V			

L5	8021033	Coil 77.8MHz	L9	8021082	Coil 8.2µH 10%
L6-	8021079	Coil 2.2µH 10%			
L7					

BP3	8030218	Cer. filter 5.5MHz	BP7-	8030029	Cer. filter 5.74MHz
BP5	8030021	Cer. filter 5.5MHz	BP8		
BP6	8030026	Cer. filter 5.5MHz			

SW2	8030319	OFW G3354K

PCB 12, 8008329 IF system I

BP9	8030033	Cer. filter 6.0MHz

SW2	8030318	OFW J3351K

Other electrical parts like PCB 12, IF system B/G

PCB 12, 8008332 IF system B/G/L/L'

TR6	8320554	**18**	BF 199
TR10-	8320755	**51**	BC 847B
TR12			

D15	8300635	**250**	BA 683
D17-	8300635	**250**	BA 683
D18			

C2-	4010271	10nF 10% 50V	C14-	4010271	10nF 10% 50V
C4			C15		
C9	4010271	10nF 10% 50V			

Δ indicates that static electricity may destroy the component

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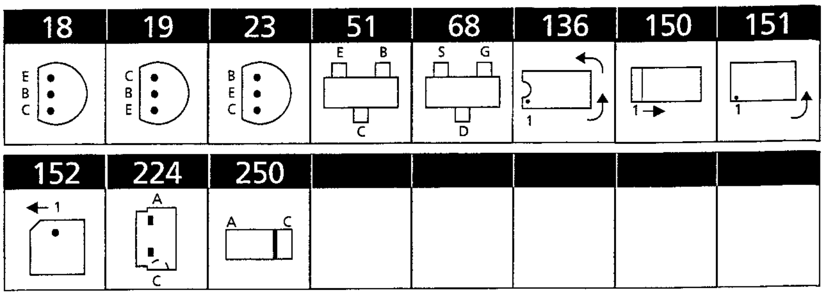

Resistors not referred to are standard, see page 3-22

SW1	8030244	OFW K9453M	SW3	8030317	OFW G9353M
SW2	8030316	OFW K3953M			

Other electrical parts like PCB 12, IF system B/G

PCB 12, 8008331
IF system B/G/L/L'/I

TR6	8320554	**18**	BF 199
TR10-TR12	8320755	**51**	BC 847B

D15	8300635	**250**	BA 683
D17-D18	8300635	**250**	BA 683

C2-C4	4010271	10nF 10% 50V	C14-C15	4010271	10nF 10% 50V
C9	4010271	10nF 10% 50V			

BP9	8030033	Cer. filter 6.0MHz

SW1	8030244	OFW K9453M	SW3	8030317	OFW G9353M
SW2	8030316	OFW K3953M			

Other electrical parts like PCB 12, IF system B/G

PCB 12, 8008330
IF system B/G/D/K/M/I

TR6	8320554	**18**	BF 199	TR16	8320755	**51**	BC 847B
TR7	8320752	**51**	BC 817-40				
TR10-TR12	8320755	**51**	BC 847B				

D11	8300635	**250**	BA 683	D20-D21	8300635	**250**	BA 683
D15	8300635	**250**	BA 683				
D17-D18	8300635	**250**	BA 683	D25	8300635	**250**	BA 683

C1-C4	4010271	10nF 10% 50V	C11	4010274	100nF -20+80% 25V
			C12	4010271	10nF 10% 50V
C8	4010274	100nF -20+80% 25V	C14-C15	4010271	10nF 10% 50V
C9-C10	4010271	10nF 10% 50V			

L10	8021082	Coil 8.2µH 10%

BP1	8030124	Cer. filter 4.5MHz ±60KHz
BP2	8030173	Cer. filter 6.5MHz ±8KHz
BP9	8030033	Cer. filter 6.0MHz
BP10	8030309	Cer. filter 4.5MHz

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SW1	8008319 Submodul		SW3	8030317 OFW G9353M
SW2	8030316 OFW K3953M		SW4	8030147 OFW G3450

Other electrical parts like PCB 12, IF system B/G

PCB 14, 8008367 AV Switch (incl. PCB 6)

See page 3-8 regarding PCB 6)

IC1Δ	8341024	**150**	4066	IC14Δ	8341024	**150**	4066
IC2Δ-	8342347	**136**	TEA 6425	IC15-	8341022	**150**	4558
IC4Δ				IC21			
IC5Δ	8342349	**136**	TEA 5114A	IC22-	8341857	**151**	LM 339
IC6	8341747	**150**	TL 7705BCD	IC24			
IC7Δ	8341024	**150**	4066	IC25-	8341022	**150**	4558
IC8Δ	8342346	**136**	GM 62093	IC34			
IC9Δ	8341025	**150**	4094	IC35Δ	8341024	**150**	4066
IC10Δ	8342350	**136**	TDA 7314S	IC36	8341231	**151**	LF 347
IC11Δ	8342346	**136**	GM 62093	IC37-	8341857	**151**	LM 339
IC12Δ	8341025	**150**	4094	IC38			
IC13Δ*	8342276	**152**	83C524	IC40Δ	8342397	**150**	MK 41T56

TR1	8320755	**51**	BC 847B	TR67	8320497	**18**	BC 547B
TR3-	8320755	**51**	BC 847B	TR68	8321050	**19**	ZTX 788B
TR6				TR69-	8320755	**51**	BC 847B
TR7	8320616	**51**	BC 858B	TR70			
TR8	8320778	**51**	BC 858C	TR78-	8320552	**18**	BC 327-25
TR9	8320615	**51**	BC 848B	TR79			
TR10Δ	8320856	**68**	2N 7002	TR80	8320755	**51**	BC 847B
TR11Δ	8320899	**68**	BSS 84	TR81-	8320811	**51**	BC 857B
TR12Δ	8320856	**68**	2N 7002	TR82			
TR14-	8320811	**51**	BC 857B	TR83	8320755	**51**	BC 847B
TR19				TR85	8320811	**51**	BC 857B
TR20-	8320755	**51**	BC 847B	TR88	8320755	**51**	BC 847B
TR27				TR89	8320811	**51**	BC 857B
TR29-	8320755	**51**	BC 847B	TR90-	8320755	**51**	BC 847B
TR30				TR91			
TR35	8320755	**51**	BC 847B	TR92	8320811	**51**	BC 857B
TR36	8320497	**18**	BC 547B	TR93	8320755	**51**	BC 847B
TR37	8320755	**51**	BC 847B	TR94	8320811	**51**	BC 857B
TR41	8320755	**51**	BC 847B	TR95-	8320755	**51**	BC 847B
TR42	8320503	**18**	BC 557B	TR96			
TR43	8320497	**18**	BC 547B	TR98-	8320755	**51**	BC 847B
TR44	8320811	**51**	BC 857B	TR100			
TR45-	8320755	**51**	BC 847B	TR101	8320811	**51**	BC 857B
TR47				TR102	8320755	**51**	BC 847B
TR51	8320552	**18**	BC 327-25	TR104	8320552	**18**	BC 327-25
TR52	8320755	**51**	BC 847B	TR105-	8320811	**51**	BC 857B
TR53	8320507	**18**	BC 337-25	TR106			
TR54	8320811	**51**	BC 857B	TR107	8320755	**51**	BC 847B
TR55	8320552	**18**	BC 327-25	TR108	8320811	**51**	BC 857B
TR56	8320755	**51**	BC 847B	TR109	8321072	**19**	ZTX 690B
TR60	8320755	**51**	BC 847B	TR111	8342567	**23**	ZR 431C
TR61	8320811	**51**	BC 857B	TR112	8320552	**18**	BC 327-25
TR62	8320755	**51**	BC 847B	TR113	8320507	**18**	BC 337-25

D6-	8300482	**250**	LL 4148	D29	8300482	**250**	LL 4148
D11				D30	8300606	**250**	LL 4448
D12	8300607	**250**	Z3.3V 5% 0.4W	D34-	8300482	**250**	LL 4148
D13-	8300482	**250**	LL 4148	D35			
D14				D36-	8300606	**250**	LL 4448
D15	8300520	**224**	Z6.8V 5% 0.5W	D49			
D16-	8300482	**250**	LL 4148	D51-	8300606	**250**	LL 4448
D17				D56			
D18	8300799	**250**	BAS 29	D57	8300482	**250**	LL 4148
D19-	8300482	**250**	LL 4148	D58	8300636	**250**	Z7.5V 5% 0.5W
D20				D59-	8300482	**250**	LL 4148
D21-	8300520	**224**	Z6.8V 5% 0.5W	D60			
D22				D61	8300636	**250**	Z7.5V 5% 0.5W
D23-	8300606	**250**	LL 4448	D62	8300482	**250**	LL 4148
D24				D63-	8300562	**250**	Z5.6V 2% 0.5W
D25	8300482	**250**	LL 4148	D64			
D28	8300606	**250**	LL 4448	D65	8300644	**250**	Z6.2V 2% 0.5W

** Specially selected or adapted sample*

Δ indicates that static electricity may destroy the component

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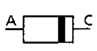
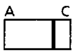
209	250						
							

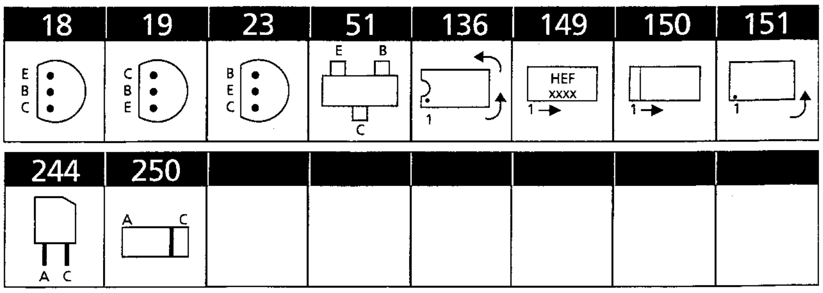
Resistors not referred to are standard, see page 3-22

D67	8300644	**250**	Z6.2V 2% 0.5W
D68	8300482	**250**	LL 4148
D77	8300914	**250**	SS 14
D79	8300482	**250**	LL 4148
D82	8300482	**250**	LL 4148
D84	8300482	**250**	LL 4148
D92	8300482	**250**	LL 4148
D94-D95	8300606	**250**	LL 4448
D96-D98	8300584	**250**	Z15V 5% 0.5W
D99	8300914	**250**	SS 14
D100	8300762	**250**	Z9.1V 2% 0.5W
D129-D134	8300482	**250**	LL 4148
D135	8300636	**250**	Z7.5V 5% 0.5W
D136-D138	8300482	**250**	LL 4148
D139	8300818	**250**	BAS 85
D140	8300482	**250**	LL 4148
D141-D148	8300644	**250**	Z6.2V 2% 0.5W
D149-D150	8300482	**250**	LL 4148
D151-D153	8300201	**209**	Z6.2V 5% 0.4W

R22-R25	5021391	75Ω 1% 1/4W
R30-R33	5021496	11.8KΩ 1% 1/4W
R34-R37	5021495	5.9KΩ 1% 1/4W
R70	5012240	100KΩ 1% 1/10W
R73	5012374	31.6KΩ 1% 1/10W
R77	5012298	22KΩ 1% 1/10W
R80	5011599	49.9KΩ 1% 1/8W
R122	5011599	49.9KΩ 1% 1/8W
R170	5021484	100Ω 1% 1/4W
R172	5021484	100Ω 1% 1/4W
R173	5021391	75Ω 1% 1/4W
R199	5021484	100Ω 1% 1/4W
R200	5021483	68Ω 1% 1/4W
R219	5021391	75Ω 1% 1/4W
R228-R229	5021483	68Ω 1% 1/4W
R236-R237	5021391	75Ω 1% 1/4W
R247	5021484	100Ω 1% 1/4W
R249	5021484	100Ω 1% 1/4W
R254-R261	5021391	75Ω 1% 1/4W
R273-R275	5021370	28.7KΩ 1% 1/4W
R282	5011631	1KΩ 1% 1/4W
R283-R284	5011857	4.42KΩ 1% 1/4W
R345-R347	5012350	27.4KΩ 1% 1/10W
R354-R355	5021484	100Ω 1% 1/4W
R368-R369	5021484	100Ω 1% 1/4W
R378-R379	5021484	100Ω 1% 1/4W
R466	5021074	680Ω 1% 1/4W
R471-R472	5021484	100Ω 1% 1/4W
R474	5021524	47Ω 1% 1/4W
R475-R476	5011853	158Ω 1% 1/4W
R482	5021225	10KΩ 1% 1/4W
R484	5021493	3.9KΩ 1% 1/4W
R491	5021225	10KΩ 1% 1/4W
R493	5021493	3.9KΩ 1% 1/4W
R494-R495	5021074	680Ω 1% 1/4W
R507	5012200	2.2KΩ 1% 1/4W
R517-R518	5021372	5.36KΩ 1% 1/4W
R531	5011857	4.42KΩ 1% 1/4W
R581-R582	5012238	33KΩ 1% 1/10W
R609	5021482	5.6MΩ 1% 1/4W
R634-R635	5012200	2.2KΩ 1% 1/4W
R640	5021523	560Ω 1% 1/4W
R641-R642	5021483	68Ω 1% 1/4W
R643	5021523	560Ω 1% 1/4W
R661-R662	5021483	68Ω 1% 1/4W
R680	5011852	332Ω 1% 1/4W
R705-R708	5021511	470Ω 1% 1/4W
R714-R715	5021511	470Ω 1% 1/4W
R790	5021074	680Ω 1% 1/4W
R791	5021523	560Ω 1% 1/4W
R792	5021483	68Ω 1% 1/4W
R801-R814	5011903	180Ω 1% 1/4W
R826	5021484	100Ω 1% 1/4W
R835	5024001	2.2Ω 5% 1/8W
R838-R840	5011631	1KΩ 1% 1/4W
R842	5011281	0.82Ω 5% 1/4W
R845	5011631	1KΩ 1% 1/4W
R846	5021524	47Ω 1% 1/4W
R847-R848	5011853	158Ω 1% 1/4W
R849	5021524	47Ω 1% 1/4W
R850-R851	5021500	56Ω 1% 1/4W
R852	5021524	47Ω 1% 1/4W
R853	5011631	1KΩ 1% 1/4W

C1-C4	4000412	100pF 5% 50V
C5-C8	4000408	47pF 5% 50V
C9-C10	4000404	22pF 5% 50V
C11-C14	4000416	220pF 5% 50V
C17	4010274	100nF -20+80% 25V
C19-C26	4010274	100nF -20+80% 25V
C28-C37	4010274	100nF -20+80% 25V
C40-C41	4010237	1nF 20% 50V
C42	4000418	330pF 5% 50V
C43	4000417	270pF 5% 50V
C45	4010274	100nF -20+80% 25V
C46-C47	4010269	6.8nF 10% 50V
C50	4000423	820pF 5% 50V
C51	4000416	220pF 5% 50V
C52	4010274	100nF -20+80% 25V
C53	4010314	220nF -20+80% 25V
C54	4010273	47nF -20+80% 50V
C55	4010274	100nF -20+80% 25V
C56	4010237	1.0nF 20% 50V
C57-C58	4201163	10µF 20% 35V
C60-C63	4201163	10µF 20% 35V
C71	4010274	100nF -20+80% 25V
C73	4010274	100nF -20+80% 25V
C86	4000424	1nF 5% 50V
C87	4010314	220nF -20+80% 25V
C90-C91	4201163	10µF 20% 35V
C98	4010274	100nF -20+80% 25V
C99-C104	4201163	10µF 20% 35V
C105	4010274	100nF -20+80% 25V
C107	4010271	10nF 10% 50V
C108	4010237	1nF 20% 50V
C109	4010274	100nF -20+80% 25V
C110	4200525	22µF 20% 10V
C111-C113	4000420	470pF 5% 50V
C114-C130	4010237	1nF 20% 50V
C131	4010274	100nF -20+80% 25V
C132-C134	4010237	1nF 20% 50V
C135-C136	4000408	47pF 5% 50V
C137-C139	4010237	1nF 20% 50V
C140	4010274	100nF -20+80% 25V
C141	4000424	1nF 5% 50V
C147-C148	4010274	100nF -20+80% 25V
C149-C152	4000420	470pF 5% 50V
C153-C154	4000416	220pF 5% 50V
C155-C156	4000406	33pF 5% 50V
C157	4000287	220nF -20+80% 25V
C158	4000418	330pF 5% 50V
C159	4000287	220nF -20+80% 25V
C160	4000418	330pF 5% 50V
C161	4000287	220nF -20+80% 25V
C162	4000418	330pF 5% 50V
C163	4000287	220nF -20+80% 25V
C164	4000418	330pF 5% 50V
C165	4000287	220nF -20+80% 25V
C166	4000418	330pF 5% 50V
C167	4000287	220nF -20+80% 25V
C168	4000418	330pF 5% 50V
C169	4000287	220nF -20+80% 25V
C170	4000418	330pF 5% 50V
C171	4000287	220nF -20+80% 25V
C172	4000418	330pF 5% 50V
C173	4000287	220nF -20+80% 25V
C174	4000418	330pF 5% 50V
C175	4000287	220nF -20+80% 25V
C176	4000418	330pF 5% 50V
C181-C200	4010274	100nF -20+80% 25V
C209-C212	4130232	150nF 20% 63V
C215-C216	4100210	1.5nF 5% 63V
C219-C220	4000412	100pF 5% 50V
C221-C222	4010274	100nF -20+80% 25V
C223	4200525	22µF 20% 10V
C226	4000287	220nF -20+80% 25V
C227	4000418	330pF 5% 50V
C228	4000287	220nF -20+80% 25V
C229	4000418	330pF 5% 50V
C230	4000287	220nF -20+80% 25V
C231	4000418	330pF 5% 50V
C232	4000287	220nF -20+80% 25V
C233	4000418	330pF 5% 50V
C234	4010274	100nF -20+80% 25V
C237	4010274	100nF -20+80% 25V
C239	4010274	100nF -20+80% 25V
C241	4010274	100nF -20+80% 25V
C243	4010274	100nF -20+80% 25V
C244	4201174	2.2µF 20% 50V
C245-C246	4010274	100nF -20+80% 25V
C247	4201174	2.2µF 20% 50V
C250-C252	4200688	47µF 20% 50V
C254	4200688	47µF 20% 50V
C259	4201173	10µF 20% 50V
C262-C264	4200688	47µF 20% 50V
C265-C266	4201163	10µF 20% 35V
C267	4010274	100nF -20+80% 25V
C268	4201163	10µF 20% 35V
C270-C271	4201329	1000µF 20% 16V
C272	4000415	180pF 5% 50V
C273	4000424	1nF 5% 50V
C274	4010274	100nF -20+80% 25V
C277-C280	4201292	2.2µF 20% 50V
C283-C285	4010274	100nF -20+80% 25V
C286-C289	4201292	2.2µF 20% 50V
C299	4010274	100nF -20+80% 25V
C300-C301	4010166	100nF -20+80% 50V
C302-C303	4201163	10µF 20% 35V
C304	4010166	100nF -20+80% 50V
C501	4010274	100nF -20+80% 25V
C504	4000417	270pF 5% 50V
C505	4201188	220µF 20% 25V

⇨



Resistors not referred to are standard, see page 3-22

C506-	4000412	100pF 5% 50V	C533-	4201163	10µF 20% 35V
C511			C535		
C512	4010274	100nF -20+80% 25V	C536	4010274	100nF -20+80% 25V
C517-	4010274	100nF -20+80% 25V	C537	4000416	220pF 5% 50V
C518			C538	4010274	100nF -20+80% 25V
C519	4201163	10µF 20% 35V	C545-	4010274	100nF -20+80%25V
C521	4201163	10µF 20% 35V	C546		
C522	4000397	27pF 2% 50V	C547	4201188	220µF 20% 25V
C523	4201163	10µF 20% 35V	C548	4010271	10nF 10% 50V
C524	4000392	100pF 2% 50V	C549-	4010237	1nF 20% 50V
C525	4000397	27pF 2% 50V	C550		
C526	4201163	10µF 20% 35V	C551	4010314	220nF -20+80% 25V
C528	4010274	100nF -20+80% 25V	C556-	4010271	10nF 10% 50V
C529	4000424	1nF 5% 50V	C557		
C530	4000392	100pF 2% 50V	C558-	4010263	2.2nF 10% 50V
C531	4010237	1nF 20% 50V	C559		

L1-	8020821	Coil 2.2µH 5%	L10	8020907	Coil 47µH 10%
L2			L12	8020822	Coil 3.3µH 5%
L3-	8020822	Coil 3.3µH 5%	L206	8020966	Coil 10µH 2% 400mA
L5			L207	8014110	Coil 70µH
L6-	8020705	Coil 100µH 10%	L208	8020966	Coil 10µH 400mA
L9					

X1	8090181	Crystal 14.7456MHz	X2	8090193	Crystal 32.768KHz

B1	8700040	Battery lithium

P2-	7229141	Holder f/ribbon cable 10 pole
P5		
P6	7221121	Socket 16/16 pole
P7-	7229141	Holder f/ribbon cable 10 pole
P9		
P10	7221119	Socket 12/12 pole
P11	7221121	Socket 16/16 pole
P13-	7229141	Holder f/ribbon cable 10 pole
P14		
P15-	7221118	Socket 10/10 pole
P16		
P17	7211059	Socket 16 pole
P18	7221133	Socket 8/8 pole
P19	7221046	Socket 6/6 pole
P20	7221045	Socket 5/5 pole
P21-	7211068	Socket 21 pole
P23		
P24	7210906	Socket 16 pole
P61	7221064	Plug 9/9 pole
P84	7220134	Plug 2/2 pole

PCB 20, 8008334 Satellite

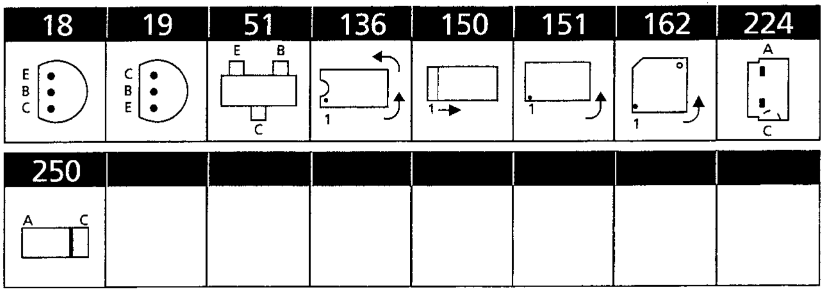
IC1-IC2	8341857	**136**	LM 339
IC5Δ-IC6Δ	8341025	**150**	4094
IC7Δ-IC8Δ	8341059	**150**	4052
IC9Δ	8342207	**151**	TDA 6151-5
IC10Δ	8342307	**136**	TDA 8740
IC11	8341098	**149**	LM 358

TR1-TR3	8320497	**18**	BC 547B
TR6-TR9	8320552	**18**	BC 327-25
TR13-TR14	8320755	**51**	BC 847B
TR17-TR18	8320755	**51**	BC 847B
TR20-TR21	8320755	**51**	BC 847B
TR23	8320503	**18**	BC 557B
TR25-TR27	8320811	**51**	BC 857B
TR28	8321064	**23**	BF 420
TR30	8321072	**19**	ZTX 690B
TR31-TR34	8321073	**19**	ZTX 790A
TR35	8320811	**51**	BC 857B
TR36-TR37	8320755	**51**	BC 847B
TR38	8320497	**18**	BC 547B
TR39	8320811	**51**	BC 857B
TR40	8320497	**18**	BC 547B
TR41-TR42	8320503	**18**	BC 557B
TR43	8320811	**51**	BC 857B
TR44	8320497	**18**	BC 547B
TR45	8320755	**51**	BC 847B
TR46	8320503	**18**	BC 557B
TR47	8320755	**51**	BC 847B
TR48	8320497	**18**	BC 547B
TR49	8320755	**51**	BC 847B

D3-D8	8300482	**250**	LL 4148
D9	8300905	**250**	Z30V 2% 0.5W
D10-D17	8300482	**250**	LL 4148
D23	8300562	**250**	Z5.6V 2% 0.5W
D24	8300563	**250**	Z5.1V 2% 0.5W
D25-D27	8300644	**250**	Z6.2V 2% 0.5W
D28-D29	8300914	**250**	SS 14
D32	8300606	**250**	LL 4448
D33-D36	8300482	**250**	LL 4148
D38-D41	8300482	**250**	LL 4148
D42	8300607	**250**	Z3.3V 5% 0.4W
D43	8300687	**250**	Z2.7V 5% 0.4W
D48	8300907	**244**	GF1B 100V

R4	5011755	1Ω 2% 1/4W
R7-R9	5011755	1Ω 2% 1/4W
R10	5021501	390Ω 1% 1/4W
R15	5011853	158Ω 1% 1/4W
R102-R103	5021226	100KΩ 1% 1/4W
R108-R109	5021374	42.2KΩ 1% 1/4W
R113	5021359	24.9KΩ 1% 1/4W
R134	5021511	470Ω 1% 1/4W
R135	5021226	100KΩ 1% 1/4W
R136	5011631	1KΩ 1% 1/4W
R137	5021226	100KΩ 1% 1/4W
R138	5012350	27.4KΩ 1% 1/10W
R139	5012391	52.3KΩ 1% 1/10W
R140-R141	5021334	3.32KΩ 1% 1/4W
R142-R143	5011517	22Ω 5% 1W
R148	5020714	0.1Ω 10% 0.4W
R149	5021511	470Ω 1% 1/4W
R150	5021520	10Ω 1% 1/4W
R151	5021372	5.36KΩ 1% 1/4W
R152-R153	5021483	68Ω 1% 1/4W
R154	5021494	4.64KΩ 1% 1/4W
R155	5021520	10Ω 1% 1/4W
R156-R157	5021522	1.2Ω 5% 1/4W
R158	5020714	0.1Ω 10% 0.4W
R168	5021501	390Ω 1% 1/4W
R171	5021501	390Ω 1% 1/4W
R172	5020547	68Ω 5% 2W
R173	5012169	220KΩ 1% 1/4W
R174	5021226	100KΩ 1% 1/4W
R177	5021522	1.2Ω 5% 1/4W
R186	5021494	4.64KΩ 1% 1/4W
R191	5021494	4.64KΩ 1% 1/4W
R195	5011852	332Ω 1% 1/4W
R196	5011631	1KΩ 1% 1/4W
R199-R200	5021528	18KΩ 1% 1/4W
R201	5021226	100KΩ 1% 1/4W
R203	5021511	470Ω 1% 1/4W
R206	5021334	3.32KΩ 1% 1/4W
R210-R211	5021382	5.6KΩ 1% 1/4W
R212-R213	5021492	2.7KΩ 1% 1/4W
R214	5021074	680Ω 1% 1/4W
R216	5021334	3.32KΩ 1% 1/4W
R217	5012175	43.2KΩ 1% 1/4W
R218	5021523	560Ω 1% 1/4W
R223	5021225	10KΩ 1% 1/4W

Δ indicates that static electricity may destroy the component



Resistors not referred to are standard, see page 3-22

C4-	4000400	10pF 5% 50V
C6		
C8	4000400	10pF 5% 50V
C9	4000406	33pF 5% 50V
C10	4000410	68pF 5% 50V
C11	4000404	22pF 5% 50V
C12	4000410	68pF 5% 50V
C13-	4000412	100pF 5% 50V
C15		
C16	4000418	330pF 5% 50V
C17	4000420	470pF 5% 50V
C18	4000418	330pF 5% 50V
C19-	4010267	4.7nF 10% 50V
C20		
C21-	4010271	10nF 10% 50V
C22		
C23	4010272	22nF -20+80%50V
C24	4010273	47nF -20+80% 50V
C25-	4010274	100nF -20+80% 25V
C28		
C29	4010216	22nF 10% 100V
C30-	4010274	100nF -20+80% 25V
C31		
C32	4010263	2.2nF 10% 50V
C33-	4010274	100nF -20+80% 25V
C35		
C36-	4010314	220nF -20+80% 25V
C37		
C38	4010263	2.2nF 10% 50V
C39	4010216	22nF 10% 100V
C40-	4010314	220nF -20+80% 25V
C42		
C44	4010216	22nF 10% 100V
C47-	4010274	100nF -20+80% 25V
C48		
C49	4130235	47nF 20% 63V

C50	4201256	470µF 20% 25V
C51	4200628	100µF 20% 16V
C52	4201171	1µF 20% 50V
C53	4201173	10µF 20% 50V
C55	4010216	22nF 10% 100V
C56-	4200824	22µF 20% 50V
C59		
C61-	4201171	1µF 20% 50V
C63		
C64	4201256	470µF 20% 25V
C66	4201173	10µF 20% 50V
C69	4201173	10µF 20% 50V
C70	4201174	2.2µF 20% 50V
C76	4201256	470µF 20% 25V
C77	4000411	82pF 5% 50V
C80	4000412	100pF 5% 50V
C83	4100301	1nF 2.5% 63V
C84	4201171	1µF 20% 50V
C85	4201173	10µF 20% 50V
C86	4201171	1µF 20% 50V
C87	4010274	100nF -20+80% 25V
C88	4010314	220nF -20+80% 25V
C89	4200628	100µF 20% 16V
C90	4010237	1nF 20% 50V
C91	4010316	100nF 10% 25V
C92	4010273	47nF -20+80% 50V
C93-	4010316	100nF 10% 25V
C94		
C95	4201143	10µF 20% 25V Bipolar
C97-	4010274	100nF -20+80% 25V
C99		
C101	4010314	220nF -20+80% 25V
C972-	4130328	33nF 5% 63V
C974		
C975	4130473	120nF 5% 63V

L2-	8021090	Coil 6.8µH 5%
L3		
L5	8020907	Coil 47µH 10%
L6	8022344	Coil 600µH

L8	8020759	Coil 1mH 10%
L9	8020808	Coil 330µH 10%
L10-	8021082	Coil 8.2µH 10%
L11		

BP1	8030283	Cer. filter 5.80MHz
BP2	8030284	Cer. filter 6.5MHz
BP3	8030285	Cer. filter 6.65MHz
BP6	8030286	2 x cer. filter 8.28MHz
BP8	8030287	2 x cer. filter 8.10MHz
BP10	8030288	2 x cer. filter 7.92MHz

BP11	8030289	2 x cer. filter 7.74MHz
BP12	8030290	2 x cer. filter 7.56MHz
BP13	8030291	2 x cer. filter 7.38MHz
BP14	8030292	2 x cer. filter 7.20MHz
BP15	8030293	2 x cer. filter 7.02MHz

TU1	8050149	Tuner SXT2001CDI

P25	7221121	Plug 16/16 pole
P98	7500296	Contact pin

PCB 30, 8008335 Dolby Surround

IC1Δ	8341058	**150**	4051
IC2Δ	8341059	**150**	4052
IC3Δ-IC4Δ	8341173	**136**	PCF 8574
IC5	8341510	**136**	SSM-2126
IC6Δ	8341861	**151**	TMS4C1024 DRAM
IC7	8342238	**151**	TDA 7318D
IC8	8342387	**162**	LV 1001MA
IC9	8341812	**151**	LM 393
IC10-IC15	8341022	**150**	4558

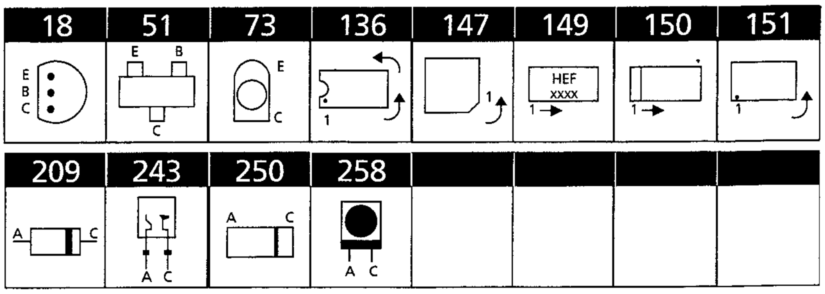
TR1	8320595	**18**	BC337-40
TR2-TR5	8321080	**51**	FMMT 491A
TR6-TR7	8320811	**51**	BC 857B
TR8-TR9	8320755	**51**	BC 847B
TR10	8320497	**18**	BC 547B
TR11	8320811	**51**	BC 857B
TR12	8320755	**51**	BC 847B
TR13	8320811	**51**	BC 857B
TR14	8321073	**19**	ZTX 790A

D1-D9	8300482	**250**	LL 4148
D10	8300520	**224**	Z6.8V 5%
D11	8300661	**250**	Z4.3V 2%
D12	8300762	**250**	Z9.1V 2% 0.5W
D13-D14	8300914	**250**	SS 14
D15-D16	8300482	**250**	LL 4148
D29	8300482	**250**	LL 4148

R11	5013012	137KΩ 1% 1/10W
R12-R13	5011858	7.68KΩ 1% 1/4W
R145	5011993	69.8KΩ 1% 1/8W
R146	5012200	2.2KΩ 1% 1/4W
R147	5012202	4.7Ω 5% 1/4W
R150	5012202	4.7Ω 5% 1/4W
R151-R152	5012240	100KΩ 1% 1/10W
R153	5020875	10MΩ 5% 1/8W
R154	5021513	0.47Ω 5% 1/4W
R156	5021532	270Ω 1% 1/4W

C1-C5	4000414	150pF 5% 50V
C6-C7	4000290	22nF 10% 50V
C8-C9	4000326	680pF 5% 50V
C10-C11	4000405	27pF 5% 50V
C12	4000409	56pF 5% 50V
C13	4000410	68pF 5% 50V
C14	4000415	180pF 5% 50V
C15-C16	4000420	470pF 5% 50V
C17	4000326	680pF 5% 50V
C18-C23	4000424	1nF 5% 50V
C24	4000461	1nF 5% 50V
C25	4010274	100nF -20+80% 25V
C26	4010242	3.9nF 10% 50V
C27	4010173	4.7nF 10% 50V
C28-C29	4010272	22nF -20+80% 50V
C30-C54	4010274	100nF -20+80% 25V
C55	4010175	33nF 10% 50V
C56-C57	4010314	220nF -20+80% 25V
C58	4010315	22nF 10% 25V
C59-C60	4010323	1µF -20+80% 16V
C61-C64	4130309	330nF 10% 63V
C65	4010339	68nF 10% 50V
C66	4010340	150nF 10% 25V
C67-C68	4000351	1.5nF 5% 50V
C69	4100210	1.5nF 5% 63V
C70	4100239	4.7nF 5% 63V
C71	4100308	2.7nF 5% 63V
C72-C74	4130265	10nF 10% 63V
C75-C78	4130304	22nF 10% 63V
C79-C83	4130306	100nF 10% 63V
C84-C87	4130307	150nF 10% 63V
C88-C90	4130308	220nF 10% 63V
C91	4130347	5.6nF 10% 63V
C92	4200510	10µF 20% 16V
C93-C95	4200628	100µF 20% 16V
C96	4200672	22µF 20% 16V Bipolar
C97-C100	4200916	4.7µF 20% 25V
C101	4201143	10µF 20% 25V Bipolar
C102-C106	4201163	10µF 20% 35V
C107	4201165	22µF 20% 10V
C108	4010274	100nF -20+80% 25V
C109	4201165	22µF 20% 10V
C110-C111	4201188	220µF 20% 25V
C112-C119	4200711	1000µF -20+80% 10V
C120	4200704	470µF 20% 25V
C121-C133	4200916	4.7µF 20% 25V
C134	4340034	7.5-50pF
C135	4010274	100nF -20+80% 25V
C136-C137	4100308	2.7nF 5% 63V
C138-C139	4130265	10nF 10% 63V
C140	4200628	100µF 20% 16V

Δ indicates that static electricity may destroy the component



Resistors not referred to are standard, see page 3-22

L1- L2	8020916	Coil 47µH 5% 450mA	L3	8021031	Coil 47µH 1.4A

T1	8014110	Transformer 70µH

X1	8090192	Crystal 8MHz

P26	7210739	Socket 16 pole
P53- P56	7210518	DIN 8 pole

PCB 31, 8007809 Nicam

IC1	8340790	**136**	4558	IC5	8341225	**136**	LM 3578
IC2	8341724	**147**	SAA 7322	IC6	8341368	**136**	TL 026CP
IC3Δ	8341308	**136**	74HC4053	IC7	8341754	**147**	CF 70088
IC4	8340790	**136**	4558				

TR3	8320595	**18**	BC 337-40	TR4	8320615	**51**	BC 848B

D1	8300817	**209**	1N 5819	D3- D4	8300482	**250**	LL 4148
D2	8300639	**250**	Z12 2%				

R1	5012154	1KΩ 1% 1/8W	R22-	5011557	10KΩ 1% 1/8W
R3	5020759	0.27Ω 5% 1/4W	R24		
R4	5011994	4.02KΩ 1% 1/8W	R25	5012145	3.83KΩ 1% 1/8W
R10	5021301	10KΩ 1% 1/8W	R26	5012144	29.4KΩ 1% 1/8W
R11-	5021398	16.9KΩ 1% 1/8W	R27	5011557	10KΩ 1% 1/8W
R12			R28	5012144	29.4KΩ 1% 1/8W
R13-	5021368	162KΩ 1% 1/8W	R29	5012145	3.83KΩ 1% 1/8W
R14			R31	5020809	10Ω 10% 0.4W
R17-	5011557	10KΩ 1% 1/8W	R46	5011877	5.11KΩ 1% 1/8W
R19			R48	5011877	5.11KΩ 1% 1/8W
R20-	5021367	47.5KΩ 1% 1/8W	R49	5020801	2.74KΩ 1% 1/4W
R21			R50	5011792	4.75KΩ 1% 1/8W

C1	4200760	220µF -20+50% 16V	C20	4010209	47nF 10% 50V
C2	4200952	47µF -20+50% 25V	C21	4000284	330pF 5% 50V
C3	4000345	1.0nF 5% 50V	C22	4000286	470pF 5% 50V
C4	4000233	220pF 5% 50V	C23	4000326	680pF 5% 50V
C5-	4200512	1µF 20% 50V	C24	4000219	10pF ±0.5pF 50V
C8			C26	4010157	10nF 10% 50V
C9	4130262	22nF 20% 63V	C28	4000239	33pF 5% 50V
C10	4000290	22nF -20+80% 50V	C29	4130230	100nF 20% 63V
C11	4130268	10nF 5% 63V	C30	4010157	10nF 10% 50V
C12-	4010220	100nF 10% 50V	C31	4000290	22nF -20+80% 50V
C13			C32-	4000326	680pF 5% 50V
C14-	4010209	47nF 10% 50V	C34		
C15			C35	4010166	100nF -20+80% 50V
C16	4000284	330pF 5% 50V	C38	4010166	100nF -20+80% 50V
C17	4000286	470pF 5% 50V	C39	4010157	10nF 10% 50V
C18	4130268	10nF 5% 63V	C40	4000280	68pF 5% 50V
C19	4000326	680pF 5% 50V	C41	4000345	1nF 5% 50V

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Δ indicates that static electricity may destroy the component

C42	4010157	10nF 10% 50V	C50-	4000239	33pF 5% 50V
C43-	4010166	100nF -20+80% 50V	C51		
C44			C52	4200525	22µF 20% 10V
C45	4000290	22nF -20+80% 50V	C53	4010157	10nF 10% 50V
C46	4010157	10nF 10% 50V	C54-	4000219	10pF ±0.5pF 50V
C47-	4010171	1.5nF 10% 50V	C56		
C48			C57	4000290	22nF -20+80% 50V
C49	4200511	100µF 20% 10V	C58	4000267	3pF ±0.25pF 50V

L1	8020759	Coil 1mH 10%	L6	8020552	Coil 10µH 10%
L2	8020672	Coil 33µH 10%			
L3-	8020649	Coil 3.9µH 5%			
L5					

X1	8090148	Crystal 16.384MHz

P94	7220713	Socket 6/6 pole	P96	7220712	Socket 5/5 pole
P95	7220710	Socket 3/3 pole	P97	7220711	Socket 4/4 pole

PCB 41, 8008322
Format Optimize

PCB 57, 8008372
Operation Panel

P75	7211056	Socket 10 pole

PCB 58, 8008373 Display & IR

IC1Δ	8341025	**150**	4094B	IC4Δ	8342297	**150**	74HC147
IC2	8341165	**151**	U2506B	IC5	8341098	**150**	LM 358
IC3	8341857	**151**	LM 339	IC6Δ	8341036	**149**	4071

TR1-	8320755	**51**	BC 847B	TR11	8320755	**51**	BC 847B
TR2				TR15-	8320755	**51**	BC 847B
TR4-	8320740	**51**	BF 840	TR16			
TR5				TR18	8320755	**51**	BC 847B
TR8-	8320755	**51**	BC 847B	TR20	8320755	**51**	BC 847B
TR9							

PE1	8330338	**73**	BPW 16N-AS12

D1	8300482	**250**	LL 4148	D19-	8300482	**250**	LL 4148
D2	8330150	**243**	TLSH 4290	D24			
D3-	8300482	**250**	LL 4148	D25-	8330323	**258**	IR detector
D6				D26			

DP1Δ	8330337		Dotmatrix display
DP2	8330346		LED display

R93	5021511	470Ω 1% 1/4W	R94	5021512	220Ω 1% 1/4W

C1-	4000404	22pF 5% 50V	C20-	4200403	100µF 20% 25V
C4			C21		
C5-	4000420	470pF 5% 50V	C22	4200525	22µF 20% 10V
C7			C23	4200515	4.7µF 20% 25V
C8	4000424	1nF 5% 50V	C24	4200517	2.2µF 20% 50V
C9	4010237	1nF 20% 50V	C25-	4200525	22µF 20% 10V
C10	4000416	220pF 5% 50V	C26		
C11-	4010271	10nF 10% 50V	C27-	4010237	1nF 20% 50V
C13			C30		
C14	4010274	100nF -20+80% 25V	C31-	4010274	100nF -20+80% 25V
C15	4010271	10nF 10% 50V	C32		
C16-	4010274	100nF -20+80% 25V	C33-	4000412	100pF 5% 50V
C19			C34		

Δ indicates that static electricity may destroy the component

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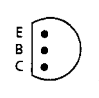
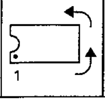
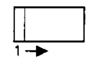
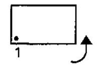
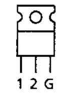
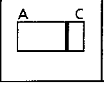
18	136	150	151	207	250		
							

Resistors not referred to are standard, see page 3-22

C35	4010274	100nF -20+80% 25V	C39	4200403	100µF 20% 25V
C36	4000416	220pF 5% 50V	C40	4010271	10nF 10% 50V
C37-	4010274	100nF -20+80% 25V	C41	4010274	100nF -20+80% 25V
C38					

L1-	8020768	Coil 455KHz	L3	8020910	Coil 220µH
L2			L4	8021000	Coil 3.3µH 20%

P63	7221119	Socket 12/12 pole

CP1-	7530128	Contact pin
C10		

PCB 59, 8008374 Camcorder Interface & Headphone

IC1	8341231	**151**	LF 347

TR1-	8320497	**18**	BC 547B	TR12-	8320503	**18**	BC 557B
TR4				TR13			
TR6-	8320497	**18**	BC 547B	TR14	8320507	**18**	BC 337-25
TR7				TR15	8320552	**18**	BC 327-25
TR9-	8320497	**18**	BC 547B				
TR10							

D1-	8300482	**250**	LL 4148	D7-	8300644	**250**	Z6.2V 2% 0.5W
D4				D8			
D5-	8300562	**250**	Z5.6V 2% 0.5W				
D6							

R1-	5011631	1KΩ 1% 1/4W	R66-	5021524	47Ω 1% 1/4W
R3			R69		
R4	5021520	10Ω 1% 1/4W	R70-	5021521	82Ω 1% 1/4W
R5-	5011859	8.25KΩ 1% 1/4W	R71		
R6			R72-	5021391	75Ω 1% 1/4W
R12	5021511	470Ω 1% 1/4W	R73		
R16	5011631	1KΩ 1% 1/4W	R74	5021509	84.5Ω 1% 1/4W
R21-	5021492	2.7KΩ 1% 1/4W	R78-	5021484	100Ω 1% 1/4W
R22			R81		
R30-	5021511	470Ω 1% 1/4W	R82-	5021508	47KΩ 1% 1/4W
R31			R83		
R59-	5021226	100KΩ 1% 1/4W	R84-	5021511	470Ω 1% 1/4W
R63			R89		
R64-	5021372	5.36KΩ 1% 1/4W			
R65					

C1-	4010263	2.2nF 10% 50V	C19	4010263	2.2nF 10% 50V
C2			C20-	4010314	220nF 20+80% 25V
C3	4010237	1nF 20% 50V	C21		
C4	4010315	22nF 10% 25V	C22-	4200517	2.2µF 20% 50V
C5-	4010274	100nF -20+80% 25V	C25		
C10			C26-	4200688	47µF 20% 50V
C11	4010237	1nF 20% 50V	C27		
C12-	4010274	100nF -20+80% 25V	C29	4010263	2.2nF 10% 50V
C14			C30	4200688	47µF 20% 50V
C16-	4010274	100nF -20+80% 25V			
C18					

L1-	8020916	Coil 47µH 5% 450mA			
L2					
P1	7210802	Socket headphone	P64	7221121	Socket 16/16 pole
P3	3169103	Socket panel			

PCB 60, 8008375 Mains Distribution

IC1-IC2	8330295	**136** K3021PG			
ST1-	8300320	**207** BTB 06			
ST2	3152902	Holder			
C1	4130569	470nF 20% 250V	C2	4130505	100nF 20% 250V
L1	8021036	Coil 100µH			
F1	6600121	Fuse 3.15AT			
	7500223	Fuse holder			
T1	8022295	Coil 2 x 0.4mH	T2	8022328	Coil 2 x 30mH
P65	7219083	Socket 2 pole	P68	7221149	Socket 2/2 pole
P66	7220897	Socket 2/2 pole	P69	7221077	Socket 4/4 pole
P67	7221057	Socket 2/3 pole			
S1	7450094	Mains switch			

PCB 80, 8008337 Motor Stand Control

IC1	8341041	**150** LM 324	IC2	8342508	**136** L 2720
TR1-	8320497	**18** BC 547B			
TR4					
D5	8300563	**250** Z5.1V 2% 0.5W			
R1-	5012284	261KΩ 1% 1/8W	R9-	5011281	0.82Ω 5% 1/4W
R2			R12		
R3-	5011599	49.9KΩ 1% 1/8W	R13-	5011599	49.9KΩ 1% 1/8W
R4			R16		
R7-	5011603	787KΩ 1% 1/8W	R45-	5011281	0.82Ω 5% 1/4W
R8			R46		
C1	4010166	100nF -20+80% 50V	C9	4000287	220nF -20+80% 25V
C2	4201173	10µF 20% 50V	C10	4010166	100nF -20+80% 50V
C3-	4000287	220nF -20+80% 25V	C12	4130526	100nF 5% 63V
C6					
C7-	4000241	100pF 5% 50V			
C8					
F1	6600142	Fuse 630mAT			
L1	8020916	Coil 47µH 5% 450mA			
P180	7221045	Socket 5/5 pole	P181	7211054	Socket 6 pole

PCB 81, 8008338 Motor Stand

Set of modules

1 set of modules consiststs of PCB1-PCB2-PCB4-PCB6-PCB12- PCB14-PCB41 and mechanical pos. no. 9067

8008376	For system B/G
8008377	For system I
8008380	For system B/G/L/L'
8008379	For system B/G/L/L'/I
8008378	For system B/G/D/K/M/I

Standard resistors
Resistors 5% 1/2W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011000	5011013	5011028	5011044	5010313	5011069	5011083
1.2	5011406	5011001	5011014	5011030	5011045	5011058	5010421	
1.5	5010727	5011002	5011015	5011031	5011046	5011059	5011071	
1.8	5010857	5010787	5011016	5011033	5011047		5011072	
2.2	5011335	5010708	5010815	5011034	5011048	5011061	5011074	
2.7	5011612	5010803	5011018	5010055	5011049	5011062	5011075	
3.3	5010255	5011007	5011019	5011037		5011063	5010381	
3.9		5010782	5011021	5010700	5011051		5010392	
4.7	5010765	5011009	5011022	5010035	5010036	5011065	5011078	
5.6		5011010	5011023	5011041		5011066	5011079	
6.8	5010874	5011011	5011024	5011042	5010810	5011067	5011080	
8.2		5011012	5011026	5011043	5010038	5011068	5011081	

Resistors 5% 1/4W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5010592	5010506	5010065	5010040	5010059	5010049	5010054	5010638
1.2		5010595	5010128	5010153	5010046	5010047	5010665	
1.5	5011348	5010468	5010057	5010247	5010053	5010063	5010093	
1.8		5010822	5010362	5010066	5010135	5010072	5010791	
2.2	5010682	5010448	5010092	5010064	5010079	5010120	5010245	
2.7	5010925	5010403	5010000	5010298	5010141	5010083	5010431	
3.3	5011860	5010253	5010044	5010076	5010075	5010117	5010848	
3.9	5011377	5010622	5010070	5010069	5010060	5010073	5010714	
4.7	5010888	5010411	5010058	5010048	5010045	5010077	5011513	
5.6	5010706	5010151	5010067	5010041	5010061	5010071	5010658	
6.8	5010904	5010039	5010144	5010052	5010062	5010074		
8.2	5010880	5010056	5010068	5010154	5010091	5010505		

Resistors 5% 1/8W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011464	5011357	5010816	5010935	5011440	5011459	5020875
1.2		5011351	5011084	5011442	5011338	5011341	5011175	
1.5		5011463	5011443	5011178	5011364	5011398	5011460	
1.8			5011350	5011361	5011344	5011468		
2.2	5011032	5011376	5010886	5011353	5010833	5011369	5011342	
2.7		5011471	5011355	5011362	5011366	5011370	5011478	
3.3		5011347	5011337	5010827	5011346	5011371	5011462	
3.9		5011438	5011817	5011157	5011457	5011372	5020876	
4.7	5011363	5011038	5011441	5011363	5010937	5011343	5011611	
5.6		5011412	5011358	5010885	5011166	5011340		
6.8		5011356	5011336	5010839	5011367	5011458		
8.2		5011466	5011354	5011339	5011368	5011373		

Resistors SMD 2% 1/8W
SMD 5% 1/8W

Glue dots, approx. 200, part no. 3181932

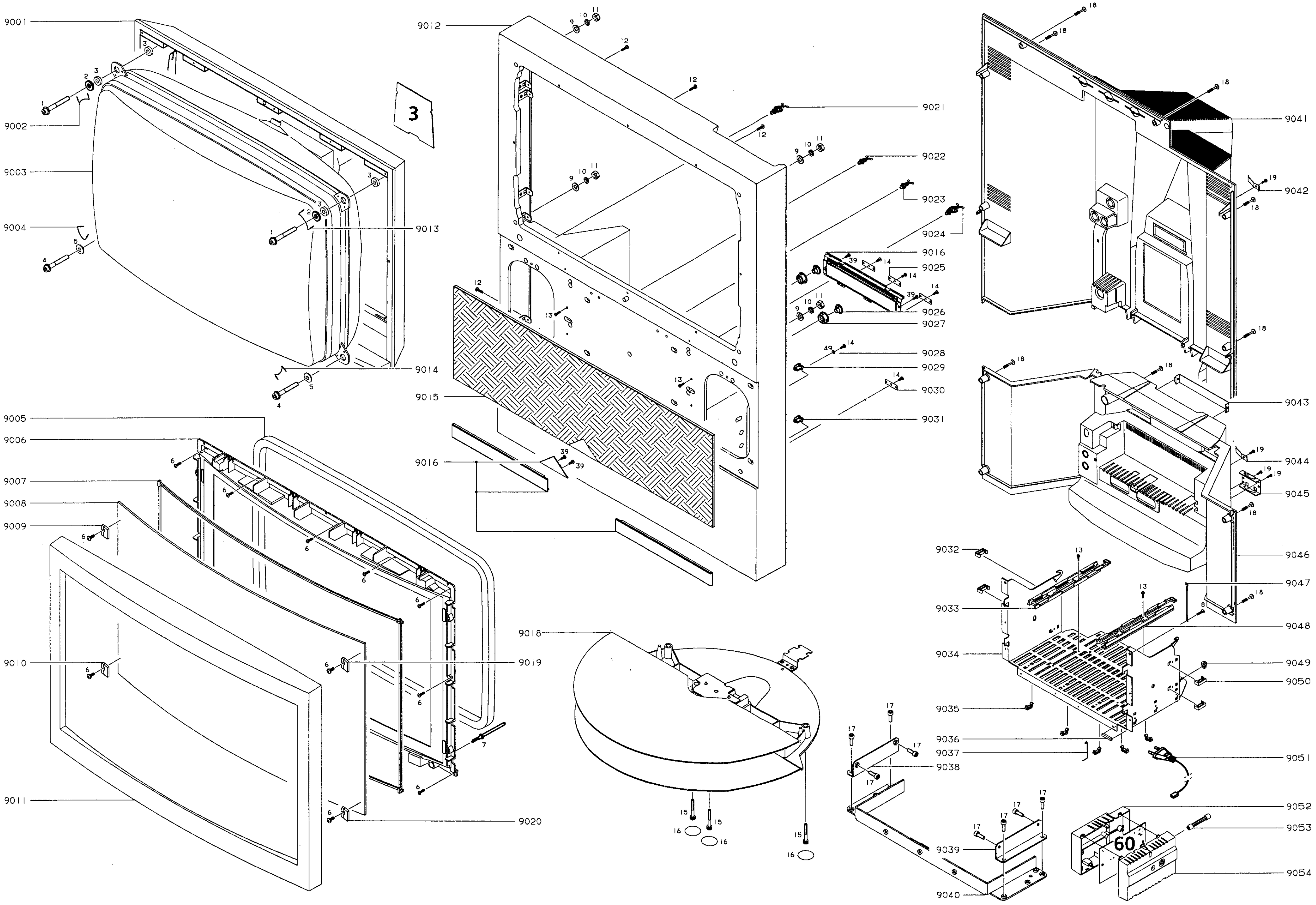
	5%	2%	2%	2%	2%	2%	5%	2%
	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5011623	5011647	5011218	5011227	5011241	5011256	5011267	5011730
1.1	5011624	5011648	5011669	5011681	5011689	5011694	5011707	
1.2	5011625	5011649	5011219	5011682	5011490	5011257	5011708	
1.3	5011626	5011650	5011670	5011683	5011242	5011258	5011709	
1.5	5011627	5011651	5011220	5011228	5011243	5011259	5011710	
1.6	5011628	5011652	5011671	5011684	5011690	5011695	5011711	
1.8	5011629	5011653	5011672	5011229	5011244	5011260	5011712	
2.0	5011630	5011654	5011673	5011685	5011691	5011696	5011713	
2.2	5011216	5011655	5011674	5011230	5011245	5011261	5011714	
2.4	5011634	5011656	5011675	5011686	5011246	5011697	5011715	
2.7	5011635	5011657	5011497	5011231	5011247	5011262	5011716	
3.0	5011731	5011658	5011499	5011500	5011692	5011698	5011717	
3.3	5011217	5011659	5011676	5011232	5011248	5011263	5011718	
3.6	5011636	5011660	5011677	5011687	5011249	5011264	5011719	
3.9	5011637	5011661	5011221	5011233	5011491	5011699	5011720	
4.3	5011638	5011662	5011498	5011688	5011492	5011700	5011721	
4.7	5011639	5011269	5011222	5011234	5011250	5011265	5011722	
5.1	5011640	5011663	5011678	5011235	5011493	5011701	5011723	
5.6	5011641	5011664	5011223	5011236	5011251	5011702	5011724	
6.2	5011642	5011665	5011224	5011237	5011693	5011703	5011725	
6.8	5011643	5011666	5011225	5011238	5011252	5011704	5011726	
7.5	5011644	5011667	5011679	5011239	5011253	5011705	5011727	
8.2	5011645	5011270	5011226	5011240	5011254	5011266	5011728	
9.1	5011646	5011668	5011680	5011489	5011255	5011706	5011729	

Resistors SMD 5% 1/10W

Glue dots, approx. 200, part no. 3181932

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
0.0	6000072							
1.0		5011920	5011932	5011944	5011956	5011968	5011980	5012275
1.2	5012326	5011921	5011933	5011945	5011957	5011969	5012267	
1.5	5012235	5011922	5011934	5011946	5011958	5011970	5012268	
1.8		5011923	5011935	5011947	5011959	5011971	5011989	
2.2		5011924	5011936	5011948	5011960	5011972	5012220	
2.7		5011925	5011937	5011949	5011961	5011973	5012269	
3.3		5011926	5011938	5011950	5011962	5011974	5012261	
3.9		5011927	5011939	5011951	5011963	5011975	5012270	
4.7		5011928	5011940	5011952	5011964	5011976	5012271	
5.6		5011929	5011941	5011953	5011965	5011977	5012272	
6.8		5011930	5011942	5011954	5011966	5011978	5012273	
8.2		5011931	5011943	5011955	5011967	5011979	5012274	

LIST OF MECHANICAL PARTS
Chassis


9001
9002
9003
9004
9005
9006
9007
9008
9009
9010
9011
9012
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9015
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9018
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9020
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9041
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9046
9047
9048
9049
9050
9051
9052
9053
9054
3
60

Cabinet

9001	3320236	Frame
9002	3152949	Holder f/degaussing coil
9003	8200104	Picture tube
	7510047	Ground current
	2810189	Spring f/ground current
	2816275	Clamp f/ground current
	8022341	Degaussing coil
	3152626	Cable holder f/degaussing coil 3.6 x 290mm
	6270648	EHT cable
9004	3152949	Holder f/degaussing coil
9005	3950055	Profile
9006	3320237	Frame f/contrast screen
9007	3950056	Profile
9008	3451367	Contrast screen
9009	3031484	Plate
9010	3031484	Plate
9011	3320238	Frame
9012*	3320272	Wall, metallic grey
	3320178	Wall, pearly black
	3320177	Wall, pearly green
	3320250	Wall, pearly red
	3320235	Wall, pearly blue
9013	3152949	Holder f/degaussing coil
9014	3152949	Holder f/degaussing coil
9015	3320276	Loudspeaker panel, metallic grey
	3320275	Loudspeaker panel, pearly black
	3320274	Loudspeaker panel, pearly green
	3320273	Loudspeaker panel, pearly red
	3320239	Loudspeaker panel, pearly blue
9016	**	Set of profiles, cassette flap and triangle

**	Pearly blue	Pearly red	Pearly green	Pearly black	Metallic grey
VHS/PAL/SECAM/DS	3164932	3164964	3164996	3164997	3164998
VHS/PAL/SECAM	3164854	3162290	3162350	3162351	3162406
VHS/PAL/DS	3164991	3164992	3164993	3164994	3164995
VHS/PAL	3164980	3162407	3162408	3162409	3162410

9018	3458903	Base cover plate
9019	3031484	Plate
9020	3031484	Plate
9021	3152828	Wire holder
9022	3152827	Wire holder
9023	3152827	Wire holder
9024	3152828	Wire holder
9025	2816285	Spring
9026	2930120	Rubber bushing
9027	2930119	Bushing
9028	2816285	Spring
9029	3152952	Holder f/VTR
9030	2816285	Spring
9031	3152952	Holder f/VTR
9032	3152995	Wire holder
9033	3152964	Guide rail, left
9034	3152996	Holder f/chassis
9035	3152986	Wire holder
9036	3950048	Profil
9037	2816275	Ground spring
9038	3152950	Holder
9039	3152950	Holder
9040	3454572	Frame
9041	3430654	Back cover, upper
9042	3152960	Holder f/scart plug
9043	3152957	Cable holder
9044	3152960	Holder f/scart plug
9045	3152958	Cable holder
9046	3430629	Back cover, lower
9047	6032951	Wire
9048	3152963	Guide rail, right
9049	2938277	Wire holder, rubber

9050	3152995	Wire holder
9051	6100325	Mains lead w/filter
	6100324	Mains lead AUS
9052	3152954	Holder f/PCB 60
9053	2776404	Push button f/main switch
9054	3152953	Lid f/PCB 60

03Modul	8008364	PCB 3, Video Output

60Modul	8008375	PCB 60, Mains Distribution

Survey of screws etc.

1	2045001	Screw 8 x 60mm
2	2622497	Washer
3	2930121	Bushing
4	2045002	Screw 8 x 55mm
5	2622498	Washer
6	2019007	Screw 4 x 16mm
7	2052000	Screw 5 x 5.8/4.9 x 63mm
8	2019020	Screw 4 x 10mm
9	2622003	Washer
10	2624065	Spring washer
11	2380156	Nut
12	2015163	Screw 4 x 20mm
13	2015156	Screw 3.5 x 12mm
14	2019022	Screw 4 x 8mm
15	2046037	Screw 6 x 40mm
16	3947565	Wafer
17	2046039	Screw 6 x 18mm
18	2021012	Screw 4 x 25mm
19	2013137	Screw 3 x 10mm
39	2011058	Screw 2.5 x 5mm
40	2622024	Washer

*

Lacquer code nos. for Wall 9012

Grey - silver metal Dupont code no. AB BO941 with clear lacquer
Green - pearl metal Dupont code no. AB 7S 103 with clear lacquer
Black - black pearl Dupont code no. AB HO 697 with clear lacquer
Red - violet pearl Dupont code no. AB 3S 104 with clear lacquer
Blue - violet pearl Dupont code no. AB BO944 with clear lacquer

El-Chassis

9060	3164946	Cover f/display
9061	2776398	Set of buttons
9062	2572049	Spacer
9063	3131349	House f/display
9064	3152992	Service strap
9065	3152970	Holder f/PCB's
9066	3152985	Holder f/positioner
9067	3320240	Frame f/chassis
9068	3152992	Service strap
9069	3152969	Holder f/PCB's

01Modul	8008323	PCB 1, Tuner & IF system B/G
	8008324	PCB 1, Tuner & IF system I
	8008327	PCB 1, Tuner & IF system B/G/L/L'
	8008326	PCB 1, Tuner & IF system B/G/L/L'/I
	8008325	PCB 1, Tuner & IF system B/G/D/K/M/I (PCB 12 is part of PCB 1)

02Modul	8008363	PCB 2, Video/Chroma & Teletext (incl. PCB 41)

04Modul	8008365	PCB 4, Power Supply
0401	3358315	Heat sink
0402	2816195	Spring clip
0403	2816195	Spring clip
0404	2816154	Spring clip
0405	3358315	Heat sink

05Modul	8008366	PCB 5, Deflection & EHT
0501	3358315	Heat sink
0502	2816195	Spring clip
0503	2816154	Spring clip
0504	2816195	Spring clip
0505	3358315	Heat sink
05T1	8014136	Transformer EHT
	6270649	Focus cable, long
	6270650	Focus cable, short

06Modul	8008368	PCB 6, Main Microcomputer (See page 3-8 regarding PCB 6)

12Modul	8008328	PCB 12, IF system B/G
	8008329	PCB 12, IF system I
	8008332	PCB 12, IF system B/G/L/L'
	8008331	PCB 12, IF system B/G/L/L'/I
	8008330	PCB 12, IF system B/G/D/K/M/I

14Modul	8008367	PCB 14, AV Switch (incl. PCB 6) (see page 3-8 regarding PCB 6)
1401	3302493	Screen
1402	3162339	Lid
1403	3152965	Holder

20Modul	8008334	PCB 20, Satellite

30Modul	8008335	PCB 30, Dolby Surround
3001	3152967	Holder
30P53- 30P56	7210518	DIN 8 pole

31Modul	8007809	PCB 31, Nicam

40Modul	8008336	PCB 40, Picture in Picture

57Modul	8008372	PCB 57, Operation Panel

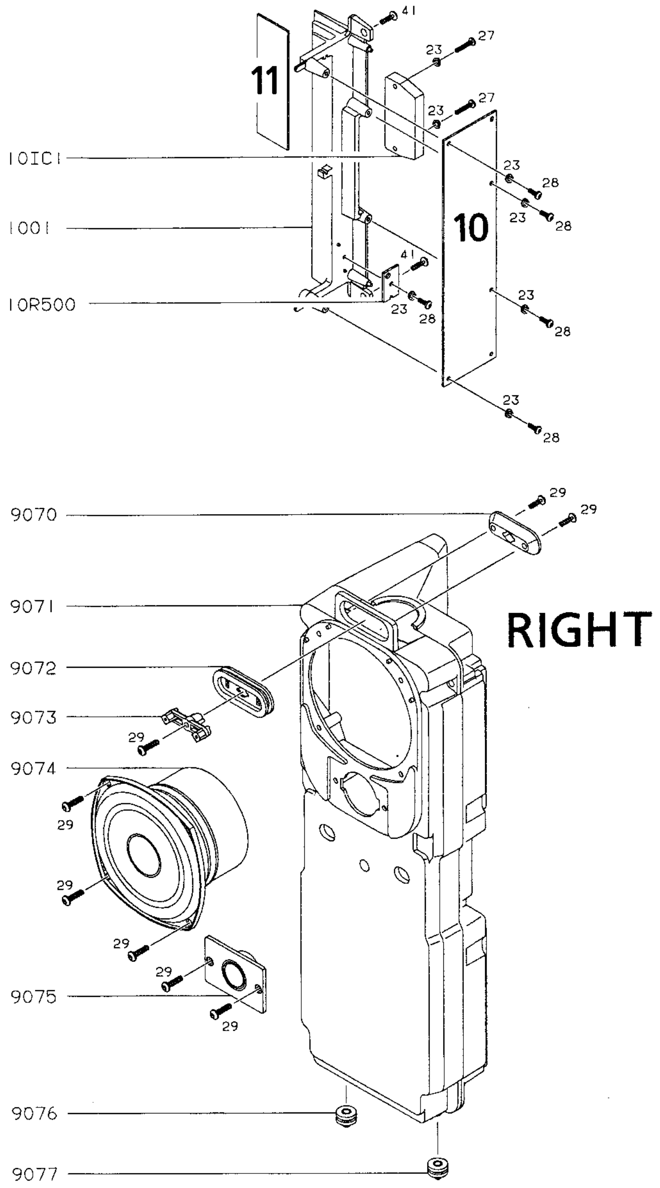
58Modul	8008373	PCB 58, Display & IR
58DP2	8330346	LED display

59Modul	8008374	PCB 59, Camcorder Interface & Headphone

Survey of screws etc.

19	2013137	Screw 3 x 10mm
20	2013153	Screw 3 x 6mm
21	2013220	Screw 2.5 x 10mm
22	2380112	Nut
23	2624013	Spring washer
24	2622117	Washer
25	2038103	Screw 3 x 12mm

Sound


41
23
27
11
10IC1
1001
10R500
10
28
9070
9071
9072
9073
9074
9075
9076
9077
29
RIGHT

9070	3152979	Holder	9073	3152980	Holder
9071	3430734	Loudspeaker cabinet, left	9074	8480261	Bass speaker 4.5"- 8 Ω
			9075	8480243	Treble speaker 18mm - 8 Ω
	3430735	Loudspeaker cabinet, right	9076	3333033	Rubber bushing
9072	3333031	Gasket	9077	3333033	Rubber bushing

10Modul	8008369	PCB 10, Sound Output
1001	3358317	Holder
10IC1	8350088	STK 4122-2
10R500	8008151	NTC resistor

11Modul	8008370	PCB 11, Cross Over Network

Survey of screws etc.

23	2624013	Spring washer	29	2019018	Screw 4 x 16mm
27	2011056	Screw 3 x 16mm	41	2015165	Screw 5 x 15mm
28	2013188	Screw 3 x 8mm			

Motorized base plate

9080	2917030	Ball
9081	3152942	Holder f/balls
9082	2993038	Centre tap
9083	2700128	Gear wheel
9084	3162464	Cover w/plate
9085	2700129	Gear wheel
9086	3152940	Holder f/motor
9087	3152941	Holder f/gear wheel
9088	3472827	Damper f/gear wheel
9089	2700131	Gear wheel
9090	2700132	Gear wheel
9091	2732092	Belt
9092	2700130	Gear wheel f/belt
9093	3472827	Damper f/gear wheel
9094	2752035	Top plate
9095	3454810	Bottom plate
9096	2700133	Gear wheel rim
9097	3152959	Holder f/wire bundle

90M1	8400210	Motor

80Modul	8008337	PCB 80, Motor Stand Control

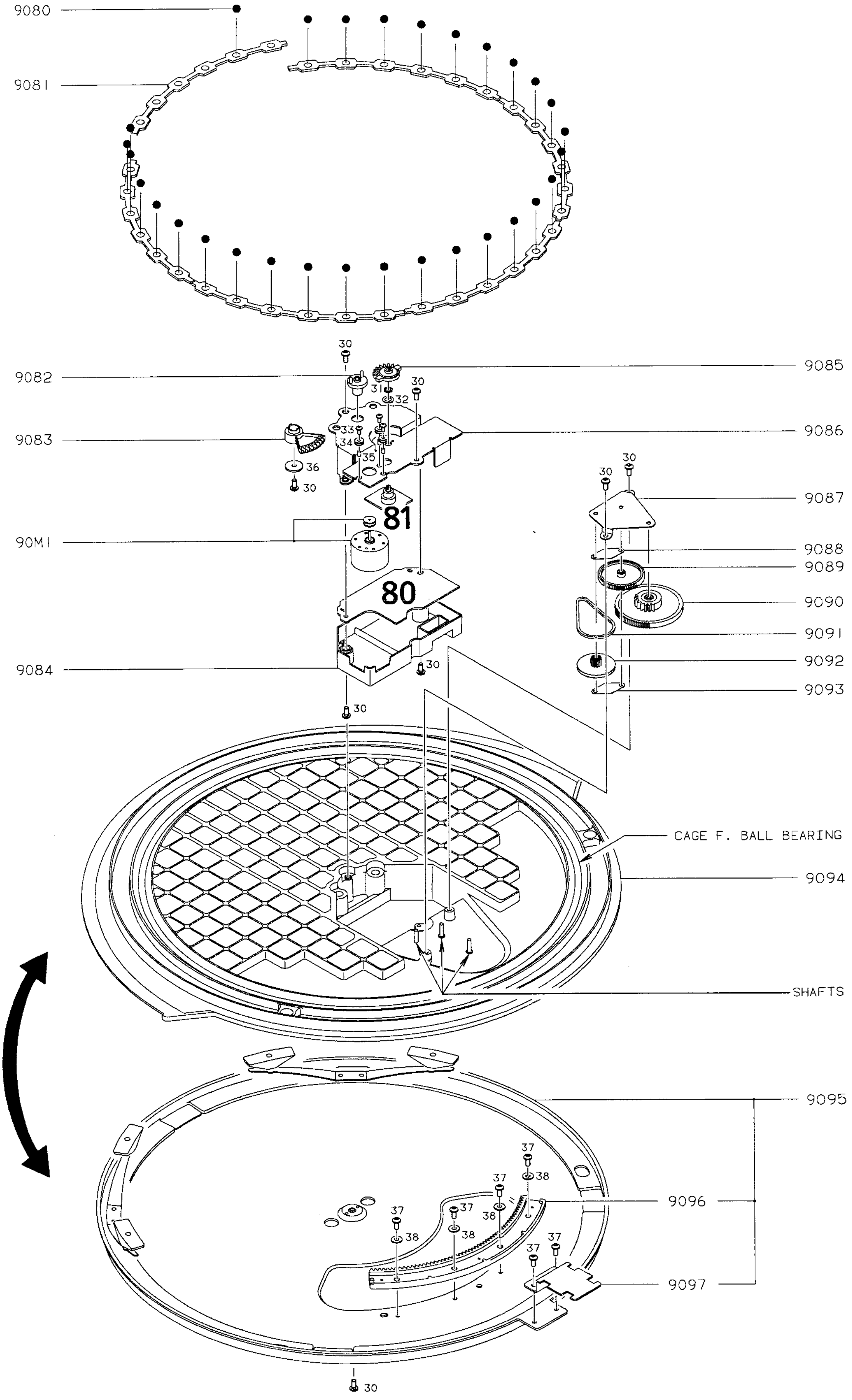
81Modul	8008338	PCB 81, Motor Stand

Survey of screws etc.

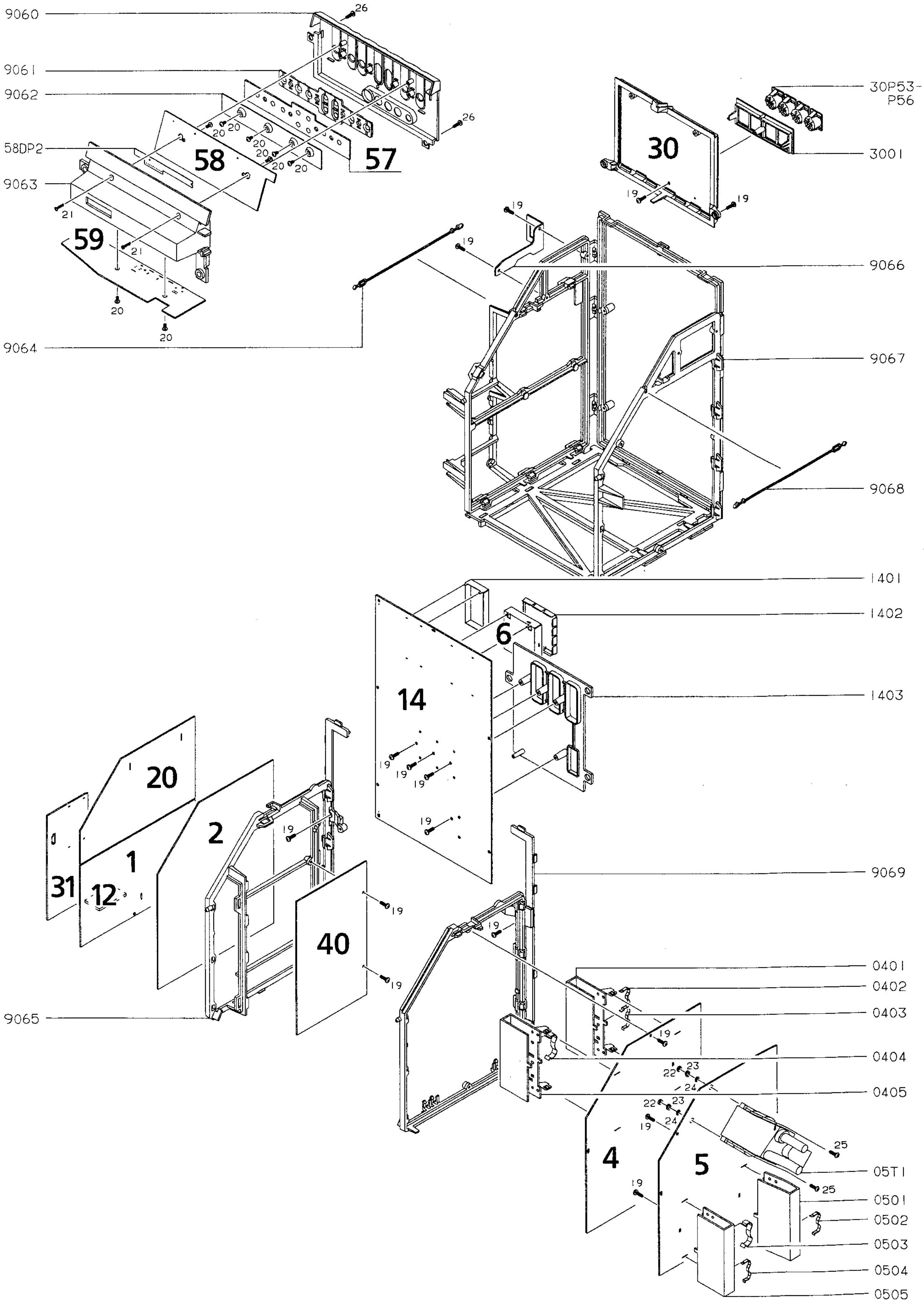
30	2042074	Screw 4 x 8mm
31	2380165	Nut
32	2622500	Washer
33	2036061	Screw 2.6 x 6.5mm
34	2938306	Rubber bushing
35	2930074	Bushing
36	2622492	Washer
37	2042073	Screw 4 x 6mm
38	2622467	Washer

LUBRICATION	
Cage for ball bearing	Full synthetic grease
Tooths on gear wheel rim 9096 Full periphery of gear wheels 9089 and 9090 Rim of gear wheel 9083	3984049 Barrierta grease L55/3 (25g)
Shafts on 9094	3984051 Barrierta oil IS Fluid (50ml)

Motorized base plate


9080
9081
30
9082
9085
31
32
30
9083
33
34
35
36
30
9086
30
30
9087
81
90M1
9088
9089
9090
80
9091
9092
9084
30
9093
30
CAGE F. BALL BEARING
9094
SHAFTS
9095
37
38
9096
9097
30

El-Chassis


58DP2
30P53-P56
05T1

Survey of wire bundles

6276988 Wire bundle f/PCB1-PCB14-PCB20-PCB30-PCB31
Consists of:
1P27 - 14P8
1P28 - 14P9
1P72 - 31P94/95/96/97
20P25 - 14P6
30P26 - 14P17

6276989 Wire bundle f/PCB2-PCB3-PCB14-PCB40
Consists of:
2P29 - 14P5
2P30 - 14P4
2P31 - 14P3
2P32 - 14P2
2P33 - 14P7
2P34 - 3P37
2P35 - 40P36
3P40 -

6276995 Wire bundle f/PCB3-PCB4-PCB5-PCB10-PCB14-PCB60
Consists of:
4P41 - 14P13
4P42 - 14P14
4P43 - 5P49
4P44 - 10P58
4P46 - 60P67
5P47 - 14P15
5P48 - 14P16
5P50 - 3P38
5P51 - Deflection coil
5P73 - Deflection coil
10P57 - 14P18

6276996 Wire bundle f/PCB14-PCB57-PCB58-PCB59
Consists of:
57P75 - 58P74
58P63 - 14P10
59P64 - 14P11

6276997 Wire bundle f/PCB14-PCB60
Consists of:
14P19 - VTR Module P122
60P66 - VTR Module
60P69 - VTR Module P101

Setting Up Guides

3503656	Danish
3503657	Swedish
3503658	English
3503659	German
3503660	Dutch
3503661	French
3503662	Italian
3503663	Spanish
3503664	Finnish

Setting Up Guide for Satellite

3500489	English

Owner's Manuals

3501601	Danish
3501602	Swedish
3501603	English
3501604	German
3501605	Dutch
3501606	French
3501607	Italian
3501608	Spanish
3501611	Finnish

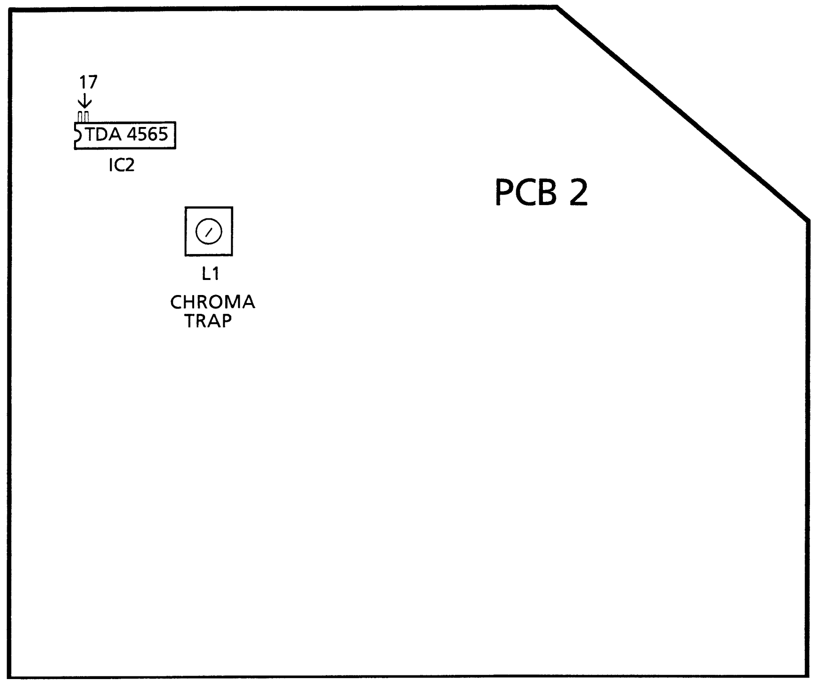
Packing

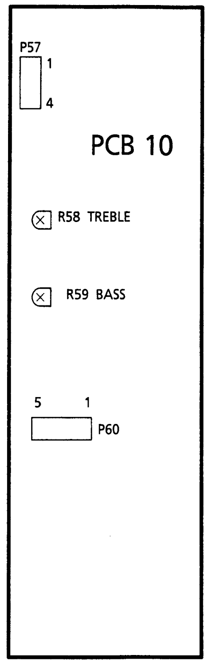
3392413	Wooden liner (1 pcs)
3397949	Foam packing
3917105	Foam foil (1 pcs)
3392410	Outer carton, top
3392410	Outer carton, bottom
3392411	Outer carton, sides
3946167	Strap
3946136	Holder f/strap
8700017	Battery f/Beo4

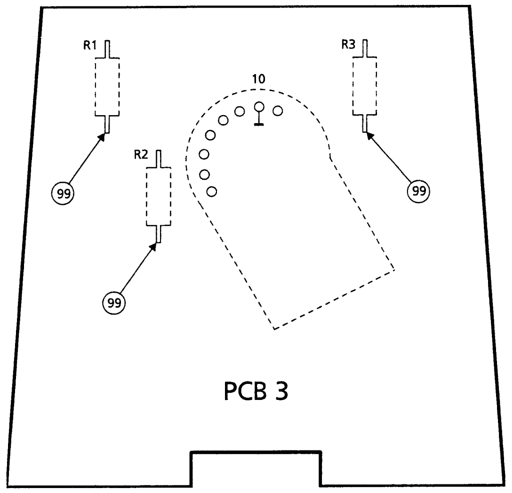
Accessories

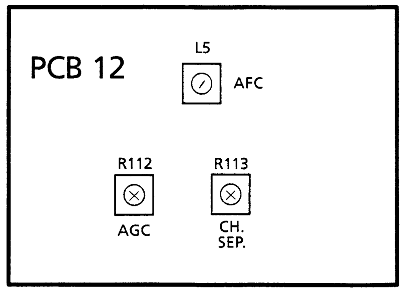
See specification guidelines page 1-2

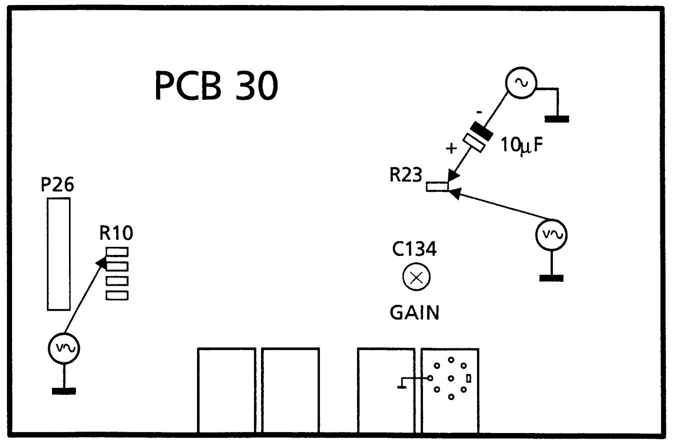
ADJUSTMENTS


17
TDA 4565
IC2
L1
CHROMA
TRAP
PCB 2


P57
1
4
PCB 10
R58 TREBLE
R59 BASS
5 1
P60


R1
R3
10
R2
99
99
99
PCB 3


PCB 12
L5
AFC
R112
R113
AGC
CH.
SEP.


PCB 30
10µF
P26
R23
R10
C134
GAIN

SERVICE ADJUSTMENTS WITH Beo4

BeoVision Avant permits six different picture formats to be selected by means of the Beo4 remote control terminal. When one of these formats has been selected it is possible to store the parameters for picture and geometry adjustments in Service mode. Separate parameters are saved for each of the six formats. See the section "Brief Operating Guide" (hereafter referred to as B.O.G.) for general information on operation, if necessary.

Reset

Set brilliance, colour saturation and contrast to nominal values so that they can be recalled by means of *RESET* (perhaps a ADD function, see B.O.G.):

- Press TV MENU 5 (or 4) then 3

Brilliance	Colour	Contrast
32	32	44

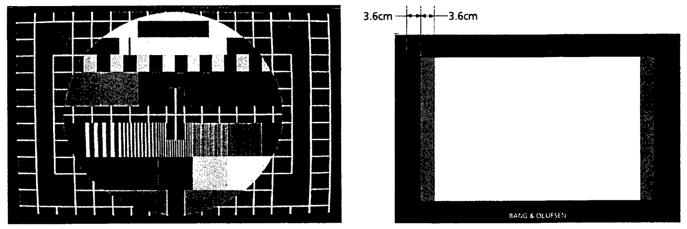
- Adjust by means of ◀◀, ▶▶, ▲ or ▼, and back up with STOP. Values can be stored by means of GO.

Format

The six different picture formats each require a separate adjustment in Service mode. The format is selected by means of a Beo4 terminal:

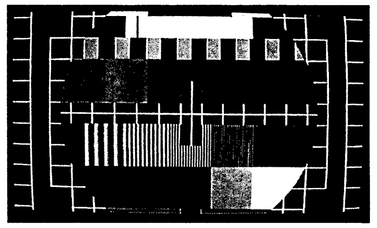
- Connect a standard 4:3 test pattern (e.g. Philips):
- Press TV and toggle on LIST until the display reads *FORMAT.*
- 1 shows a Bang & Olufsen optimized 14:9 picture when a standard 4:3 signal is connected:

FORMAT 1


3.6cm
3.6cm
BANG & OLUFSEN

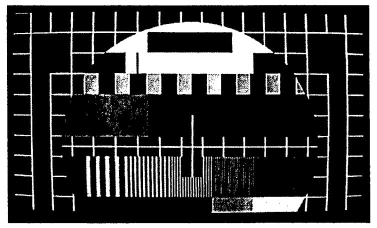
- 2 shows a full-screen 16:9 picture when a standard 4:3 signal with a black bar at the top and bottom is connected:

FORMAT 2



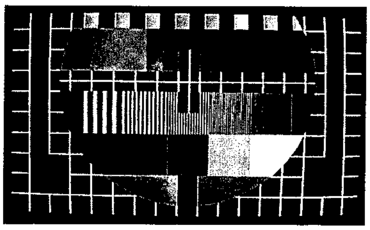
- 3 shows a full-screen 16:9 picture when a standard 4:3 signal with a black bar at the bottom of the picture is connected:

FORMAT 3



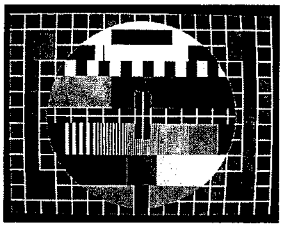
- 4 shows a full-screen 16:9 picture when a standard 4:3 signal with a black bar at the top of the picture is connected:

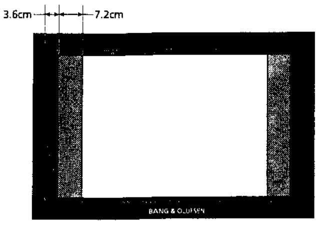
FORMAT 4



- 5 shows a standard 4:3 picture when a standard 4:3 signal is connected:

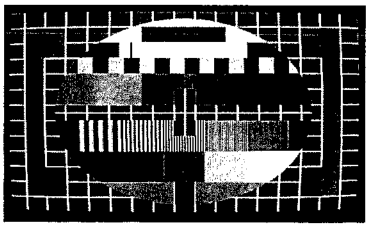
FORMAT 5



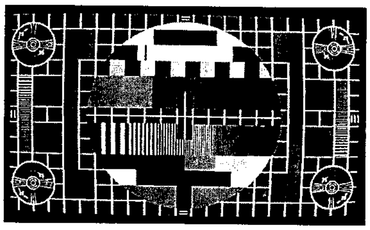


- 6 shows a full-screen 16:9 picture when a wide-screen 16:9 signal is connected:

FORMAT 6 4:3



FORMAT 6 16:9



Service mode

When the desired format has been selected, bring the TV into SERVICE MODE, thereby gaining access to the Service menu:

- Press TV MENU, and select the Setup line by means of the ▼ key, and then press GO 0 0 GO.

Service menu

1 Monitor
2 TV tuner
3 V.Tape

- Press 1 to gain access to adjustments on Monitor.

Monitor service menu

1 Monitor information
2 Service counters
3 Picture adjustments
4 Geometry adjustments
5 Text Registers

Picture adjustments

- Press 3 in the Monitor service menu to gain access to picture adjustments:

Picture adjustments

1	Rdr XX	Red drive 0 - 63
2	Gdr XX	Green drive 0 - 63
3	Rcu XX	Red cut-off balance 0 - 63
4	Gcu XX	Green cut-off balance 0 - 63

- Connect a standard 4:3 test pattern (e.g. Philips) to the selected format.
- Select picture adjustments with a digit (1 - 4) and adjust by pressing ▲ or ▼. During the adjustment procedure it is possible to select a new picture adjustment by means of ◀◀ or ▶▶. Store the adjustment by pressing GO, and select a new adjustment or end the menu by pressing STOP. The EXIT key will get you out of service menus.

Drive

- Adjust the brilliance to the nominal value: Brilliance 32.
- Remove the colour saturation: 00.
- Adjust the red and green drive (Rdr and Gdr) to correct white level.

Cut-off balance

- Adjust the brilliance to the nominal value: Brilliance 32.
- Remove the colour saturation: 00.
- Adjust the red and green cut-off balance (Rcu and Gcu) so that the dark fields in the test pattern become colourless.

Geometry adjustments

- Press 4 in the Monitor service menu to gain access to the geometry adjustments:

Geometry adjustments

1	Hph XX	Horizontal phase 0 - 63
2	Ham XX	Horizontal amplitude 0 - 63
3	Vam XX	Vertical amplitude 0 - 63
4	Vsc 00	Vertical s-correction 0 - 63
5	Vsh 31	Vertical shift/centring 0 - 63
6	Vsl XX	Vertical slope 0 - 63
7	EWc XX	East/West corner 0 - 63
8	EWp XX	East/West parabola 0 - 63
9	EWt XX	East/West tilt 0 - 63

- Connect a standard test pattern (e.g. Philips) to the selected format.
- Select geometry adjustment with a digit (1 - 9), and adjust by pressing ▲ or ▼. During the adjustment procedure it is possible to select a new geometry adjustment by pressing ◀◀ or ▶▶. Store the adjustment by pressing GO, and select a new adjustment or end the menu by pressing STOP. The EXIT key will get you out of service menus.

Horizontal centring/phase (Hph)

- Set the brilliance to the maximum value: Brilliance 62.
- Adjust the horizontal amplitude to the minimum width: Ham 00.
- If necessary, centre the picture as well as possible using 5S7 (coordinate 7G) in picture format 6 (see the section on Format).
- Centre the picture with horizontal phase (Hph) as a fine adjustment.
- Adjust the horizontal amplitude (Ham) to the correct width (see the section on Format).
- Readjust the horizontal phase (Hph), if necessary.

Horizontal amplitude (Ham)

- Adjust the horizontal amplitude (Ham) to the correct width (see the section Horizontal centring/phase (Hph)). There is a black bar at both sides of the visible picture in the following screen formats:
  Format 1 (14:9) = 3.6 cm/1.42" at each side.
  Format 5 (4:3) = 7.2 cm/2.84" at each side.

Vertical s-correction (Vsc)

- Adjust the vertical s-correction to 0 (Vsc 00) (in all formats).

Vertical centring (Vsh)

- Adjust the vertical centring to 31 (Vsh 31) (in all formats).

Vertical amplitude (Vam)

- Adjust the vertical amplitude (Vam) so that the picture fits at the top (see the section on Format).

Vertical slope (Vsl)

- Adjust the vertical slope/ramp (Vsl) so that the picture fits at the bottom (see the section on Format). The vertical amplitude (Vam) is affected.

East/West corner (E/Wc)

- Adjust the East/West corner (E/Wc) to the correct geometry at the corners.

East/West parabola (E/Wp)

- Adjust the East/West parabola (E/Wp) to the correct geometry at the sides.

East/West tilt (E/Wt)

- Adjust the East/West tilt (E/Wt) to the correct geometry.

ADJUSTMENT GUIDE

A standard colour test pattern must be connected when making the following adjustments unless otherwhise specified.
Service adjustments with the remote control terminal must have been made in advance.

Module 2 Video/Chroma & Teletext

4.43MHz chroma trap

- Connect a PAL colour bar test pattern.
- Connect an oscilloscope to 2IC2 pin 17, TDA4565 (coordinate 6I). Ground on 2IC2 pin 18.
- Adjust 2L1 (coordinate 5G) to obtain the minimum 4.43MHz residue in the signal; use a nonmagnetic adjustment tool.

Module 5 Deflection & EHT

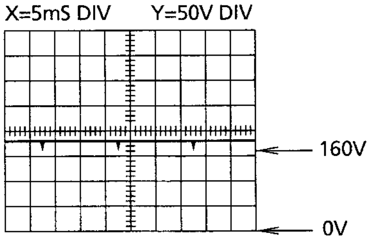
Focus

- Set the brilliance and colour saturation to their nominal values (32 and 32).
- Set the contrast to the maximum value (62).
- Adjust to optimum focusing as viewed approx. 10 cm/4" from the edge of the screen by means of the focus potentiometer 5R50 (FOCUS) .

G2 (Cut-off)

- Set brilliance to nominal value (32).
- Remove the A/V plug from the V.TAPE socket, and press **V TAPE**.
- Locate by means of an oscilloscope the test point on 3R1, 3R2 or 3R3 (oscilloscope photo No.99) which has the highest test pulse voltage.
- Adjust the G2 (SCREEN) potentiometer 5R50 until the test pulse voltage is 160VDC (absolute maximum level).
- Connect the A/V plug to the V.TAPE socket upon completion of the adjustment.

(99)



Alternative G2 Adjustment procedure

To get a precise adjustment the procedure using an oscilloscope should be followed.

- Set the brilliance and contrast to the nominal value (32).
- Remove the A/V plug from the V.TAPE socket, and press **V TAPE**.
- Cover 58PE1 (photo-transistor) on PCB 58 Display & IR.
- Use a voltmeter (Ri > 1Mohm) for measuring the voltage drop across 3R1, 3R2 and 3R3.
- Adjust by means of the G2 potentiometer 5R50 until there is a voltage of 2V across that resistor 3R1, 3R2 or 3R3, which has the smallest voltage drop.
- Connect the A/V plug to the V.TAPE socket upon completion of the adjustment.

Module 30 Dolby Processing
Gain

To be adjusted only in connection with replacement of 30IC8, 30C1, 30C18, 30C19, 30C12, 30C13, 30C134.

- Remove/lift SMD resistor 30R23 (coordinate 2B).
- Connect an audio oscillator to the solder-pad of 30R23, that leads to 30IC8 pin 53, via a 10µF electrolytic capacitor with + facing towards the solder-pad (see adjust figure page 5-1). Ground on Power Link pin 2.
- Set the audio oscillator to generate 5kHz, approx. 200mV RMS.
- Connect an AF voltmeter to the solder-pad of 30R23, that leads to 30IC8 pin 53 (AF surround input), read the level, and make a note of it.
- Connect the AF voltmeter to 30R10 (AF surround output), and adjust 30C134 until the same level is measured at 30R10 (output) as was measured at 30R23 (input).
- Check that the gain is within ±3dB by repeating the measurement at 3kHz and 1kHz.
- Reinstall 30R23.

Module 40 Picture in Picture
Cloche filter

- Connect a SECAM test pattern (Vert. colour bar).
- Adjust 40L1 until the optimum colour graduations in the colour bar have been achieved.
- Connect a SECAM test pattern (Horiz. colour bar) for control if necessary, and check by means of an oscilloscope wether all colour bars have the same level.

Module 10, Output Amplifier Adjustment of bass/treble speaker level

This adjustment to be carried out only when replacing 10IC1, 10R58, 10R59 or one of the speaker units. Module 10, Output Amplifier, is the same module in the right and left channels.

The new speaker unit will have a rated value stamped on its back, and this value has to be used when making the adjustment.

- Remove the A/V plug in V.TAPE and connect an audio oscillator to:

A/V plug:	14P21 pin 2	Audio R (right) in
	14P21 pin 4	Audio ground
	14P21 pin 6	Audio L (left) in

- Press V TAPE and toggle on LIST until the display reads *SPEAKER*, and then press 1 (Sound mode 1 - internal TV speakers).
- The TV sound controls, Bass, Treble and Balance, must be unregulated (0), and the Loudness must be cut out (off). Press: MENU 5 (or 4) 2 1 and adjust by pressing ▶▶, ◀◀, ▼ or ▲.
- Connect an AF voltmeter to 10P57, pin 3.
- If the level in the *treble* has to be adjusted, connect a 10kHz signal, and adjust the level at the input 10P57-3 to 250mV by means of the audio oscillator output and volume ∧ or ∨ on Beo4.
- If the level in the *bass* has to be adjusted, connect a 1kHz signal, and adjust the level at the input 10P57-3 to 250mV by means of the audio oscillator output and volume ∧ or ∨ on Beo4.
- Connect an AF voltmeter across the output of the unit in question (the speaker units need not be connected during the adjustment procedure):

Bass:	10P60-1	Bass out
	10P60-2	N.C.
	10P60-3	Bass ground
Treble:	10P60-4	Treble out
	10P60-5	Treble ground

- Adjust until the voltage at the speaker output corresponds to the voltage found in the speaker level table by means of the rated value stamped on the back of the speaker unit.

Bass adjustment:	10R59 (coordinate 1E)
Treble adjustment:	10R58 (coordinate 1D)

Rated value in dB	Bass	Treble
+2.00 dB	1.41 V	2.04 V
+1.75 dB	1.46 V	2.10 V
+1.50 dB	1.50 V	2.16 V
+1.25 dB	1.54 V	2.23 V
+1.00 dB	1.59 V	2.29 V
+0.75 dB	1.63 V	2.36 V
+0.50 dB	1.68 V	2.43 V
+0.25 dB	1.73 V	2.50 V
0.00 dB	1.78 V	2.57 V
- 0.25 dB	1.83 V	2.65 V
- 0.50 dB	1.88 V	2.72 V
- 0.75 dB	1.94 V	2.80 V
- 1.00 dB	2.00 V	2.88 V
- 1.25 dB	2.06 V	2.97 V
- 1.50 dB	2.12 V	3.05 V
- 1.75 dB	2.18 V	3.14 V
- 2.00 dB	2.24 V	3.24 V

Replacement of module 10, Output Amplifier

When replacing module 10, Output Amplifier, the outputs (bass and treble) shall be adjusted to the nominal value (0.00dB) according to the adjustment procedure for Adjustment of Bass/Treble Speaker Sound Level. Module 10, Output Amplifier, is the same module in the right and left channels.

Module 12 IF

To be adjusted only when replacing module 12 IF, or 12IC4, TDA9815 (coordinate 2A).

Test plug 1P89:

Pin 1	ground
Pin 2	5V
Pin 3	AF left (CH SEP)
Pin 4	V_{AFC}
Pin 5	AF right
Pin 6	V_{AGC} Takeover

- Connect an aerial signal with a known frequency (XXX.25MHz) that contains A2 stereo sound modulation.
- Select AFC to be off in the TV service setup menu, press: TV MENU 5 (or 4) 0 0 GO 2 ▸▸ ▼ GO.
- Select TV tuning menu: STOP 1 1 or TV MENU 5 (or 4) 1 1.
- Set the tuner to the known frequency, and press: X X X (digit entry) ▸▸, and select a programme number X X GO.

AFC

- Connect a DC voltmeter to 1P89 pin 4 (V_{AFC}).
- Adjust 12L5 (coordinate 2B) with a nonmagnetic trimming key until there is a voltage of 1.95V ±0.1V at 1P89-4 (V_{AFC}).

AGC Takeover

- Adjust the aerial signal level to 2mV.
- Connect a DC voltmeter to 1P89, pin 6 (V_{AGC}Takeover).
- Adjust 12R112 (coordinate 2B) until there is a voltage of 7.3V ±0.1V at 1P89-6 (V_{AGC}Takeover).

Channel separation

- Connect an oscilloscope to 1P89, pin 3.
- Adjust 12R113 (coordinate 2B) until the minimum crosstalk has been obtained.

REPAIR TIPS
Service mode

The service mode consists of two parts: Service menu and bus ignore mode.

Service menu

The service menu contains options such as picture and geometry adjustments - see the section SERVICE ADJUSTMENTS WITH Beo4. In the following description the Beo4 terminal is used for operating the product. SERVICE MODE, thereby gaining access to the Service menu:

- Press TV MENU, and select the Setup line by means of the ▼ key, and then press GO 0 0 GO. It is possible to "go backwards" in the menus by pressing STOP. Service mode is abandoned by pressing ●.

Service menu

1 Monitor
2 TV tuner
3 V.Tape

In the service menu you can choose which source you wish to have information on or wish to adjust/set up.

Select Monitor, press 1

Monitor service menu

1 Monitor information
2 Service counters
3 Picture adjustments
4 Geometry adjustments
5 Text Registers

In the Monitor service menu you can choose among the following items of information:
(Picture and Geometry adjustments are described in the section on adjustments).

Monitor information menu, press 1

Monitor information

06 IC1 :	(AP) SW	1.0
14 IC13:	(FEP) SW	1.0
Type		1811101
Serial no.		12345678
Last TV error		NO
Last ML/SL error		NO

- Software version number
- Type, and serial number
- Last TV error
- Last ML/SL error

Last error

The TV is able to detect certain types of error and to display them on the screen menu.

The first error code is for detection of TV errors.
The following error types can be displayed:
Last TV error NO = no error registered.
Last TV error xx - 1 = error on I^{2}C bus 1.
Last TV error xx - 2 = error on I^{2}C bus 2.
Last TV error DF = Data failure (EEPROM 6IC4 may be defective).
Last TV error PF = Power Fail (TDA9162 2IC7 cannot start up for TV mode).

The other error code is for detection of errors in the Master Link system.
The following error types can be displayed:
Last ML/SL error NO = no error registered.
Last ML/SL error CI = address configuration impossible.
Last ML/SL error TD = ML data pulled down.
Last ML/SL error TU = ML data pulled up.
Last ML/SL error -- = other undefinable error possibilities.

After repair of an error that has triggered the display of an error code, the error code has to be deleted. This is done by pressing GO in the Monitor information menu.

I^{2}C bus error

An I^{2}C bus error means that the communication on the bus fails when the microcomputer tries to communicate with the address in question. In most cases this means that the addressed IC is defective but the defect could also be in one of the components surrounding the IC or in other components on the bus.

Addresses in connection with I^{2}C bus errors:
Last error on bus 1

D0 - 1	14IC40, MK41T56 Time clock.
88 - 1	2IC4, TDA4680 Video processor.
8A - 1	2IC7, TDA9162 Colour decoder & sync processor.
4A - 1	41IC2, PCF8574 I^{2}C I/O expander.
2E - 1	40IC5, SDA9188 P-in-P processor.

Last error on bus 2

C0 - 2	1TU1, TV tuner.
84 - 2	1IC3, TDA8417 A2 stereo decoder.
B6 - 2	31IC7, CF70088 NICAM stereo decoder.
C6 - 2	20TU1, Satellite tuner (SXT2001CDI).
C4 - 2	20TU1, Satellite tuner (SXT2041CD).
22 - 2	2IC6, SDA5273 Teletext decoder.
80 - 2	14IC10, TDA7314S Sound controls.
90 - 2	14IC3, TEA6425 Video switch.
94 - 2	14IC4, TEA6425 Video switch.
96 - 2	14IC2, TEA6425 Video switch.
88 - 2	30IC7, TDA7318 Sound processor.
4C - 2	30IC4, PCF8574 I^{2}C I/O expander.
4E - 2	30IC3, PCF8574 I^{2}C I/O expander.

Data failure

If an error occurs in the EEPROM (6IC4) that prevents output of geometry and picture data to the TV set, the microcomputer will replace the missing data with default data that is stored in the PROM (6IC1).

Power fail

If 2IC7 (TDA9162) is unable to start up in video mode after 20 attempts, the TV is switched off. This may happen as a result of an error condition in the deflection circuits.

Last ML/SL error CI	Error during address configuration. No address has been allocated because an excessive number of units has been connected to the link. - Disconnect all units from the link and reconnect them again, one at a time. Remember that this also applies to the 6-pole ribbon cable between the TV set and the VTR unit.
Last ML/SL error TD	The link is pulled down (Low). This error can occur in the form of a physical short circuit in the link, in the link drivers, or in the ML master/source circuit in the TV. - Check whether there are pulses at 14IC13, pin 15 (ML M/S). The frequency should be approx. 1.5ms (the TV is the master). - Disconnect the units from the link, one at a time, and check at the same time whether communication starts to be transmitted on the link. Remember that this also applies to the 6-pole ribbon cable between the TV set and the VTR unit.
Last ML/SL error TU	The link is pulled up (High). This error is caused either by the pull-up resistance in the system having become too low or by an error in the link drivers. - Disconnect the TV from the external link connection. Disconnect the 6-pole ribbon cable between the TV and the VTR unit, too. Switch on the TV, and check that a telegram of approx. 15ms, measured at 14IC13, pin 13 (ML TRANSMIT), is transmitted within 3-4 seconds. It should be possible to measure the same signal at 14IC13, pin 14 (ML RECEIVE), only it will be 10-15µs delayed.

Select Text Registers in the Monitor service menu, press 5

```
Test Register setup

R01  R02  R03  R04  R05  R06  R07  R08
 5    11   0    0    0    0    0    0
R09  R10
 0    0
```

Group delay errors in certain cable aerial systems can disturb the reception of teletext. This is prevented by connecting a filter in series with the CVBS signal applied to the teletext decoder.
The numbers below the Register numbers R01 - R10 are programme numbers. If all the numbers are 0, no filter has been connected on any programme number.
If you wish to connect a filter on a programme number, select a register by pressing ◀◀ / ▶▶, then press the desired programme number, and finally press GO.
In the example above a filter has been connected on programmes 5 and 11. The filter is not engaged until the next time you switch to the programme in question.

Select Service counters in Monitor service menu, press 2

Monitor service counters

Stand-by (days)	0000
Audio mode (days)	0000
Video mode (days)	0000
On/Off (times ★10)	0000

On/Off (times ★ 10) shows how many times the TV has been switched off to stand-by mode. The number is given in full tens. If the number exceeds four digits, the four least significant digits are shown (e.g. 12834 is shown as 2834).
The other times in the menu are shown in full days.

Select TV tuner in the Service menu, press 2

TV service setup

Tuner system 1	AFC On	
Low tuning range 45	High tuning range 860	
Lower band limit 170	Upper band limit 450	
Vhf-1 const 162	Vhf-2 const 148	Uhf const 49

In the TV service setup menu it is only the Tuner system and AFC fields that have to be used. The rest of the fields are for factory usage, and the values in them may not be changed.
Tuner system:
The digital value in the field stands for the CTV system for which the applicable IF is intended.
If the Tuner & IF PCB is replaced to permit reception of a different CTV system, the digital value has to be changed.
The digital values for the various systems are the following:
B/G = 1
L/L' = 2
M = 4
D/K = 8
I = 16
The digital value for system combinations is obtained by adding the applicable digits.
The digital values for the IF variants in BeoVision Avant are the following:
B/G = 1
B/G/L/L' = 3
I = 16
B/G/L/L'/I = 19
B/G/M/D/K/I = 29
Press GO to save the digital value.

AFC On/Off is used in connection with adjustments but it may also be useful in other situations. Press ◀◀ / ▶▶ to move the cursor.
Press ▲ / ▼ to switch between On/Off.
AFC Off cannot be stored. AFC is always On after stand-by.

Select V.Tape in the Service menu, press 3, and select information in the V.Tape service menu, press 1.
In the V.Tape information menu you can see the software versions in the VTR, for example.

The V.Tape service mode is described in the service manual for the BeoVision Avant VTR.

Bus ignore mode

If an error occurs in the I^2C bus system which makes the TV go into stand-by every time it is attempted to be switched on, it is possible to switch on the TV in such a way that the error is ignored:
- The TV must be in stand-by mode.
- Short-circuit the two-pin plug, P84 (ignore) coordinate 7M, on the AV switch, PCB14.
- The TV will now start up ignoring any bus errors if that is possible. If it is not possible to start up, the reason is probably an error in 6IC3, 14IC13, 26IC3 (if a Positioner is installed), or one of the surrounding components for these IC's.

Options

The TV can be programmed for three different options.

Option 0 = The IR receiver in the TV is disconnected.

Option 1 = Video system and audio system are placed in the same room.

Option 2 = Video system and audio system are placed in different rooms.

Programming example using a Beo4 remote control terminal:
- The TV must be in stand-by mode.
- Press ●, hold it down and press LIST, press GO and then LIST until the Beo4 display reads V.OPT. Now enter the number of the desired option.

The TV is programmed for option 1 from the factory.

Sound output PCB10 & ABL PCB11

When servicing the sound output, PCB10 and ABL PCB11, the work may be facilitated by removing the cooling plate, because it covers a number of the components. The STK output IC can easily stand operating at low drive without a cooling plate for short periods of time.

SMPS on PCB4

If there is an error in the main SMPS power-supply unit on PCB4, the following tips may be helpful during the repair.

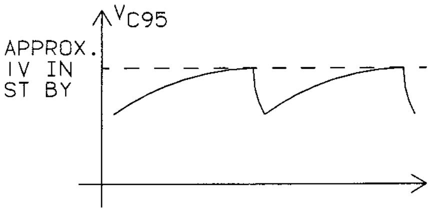
If TR41 is defective (which is checked most quickly with an ohmmeter), TR84, TR85 and TR86 should also be replaced.
If TR41 is not defective, the following should be checked:

1. The voltage at C4 must exceed approx. 250V. If it does not, the fuse or D1 may be defective.

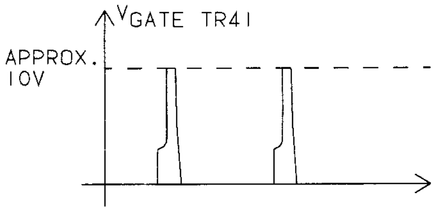
2. The power supply at C83 should be approx. 6V during start-up. If it is less, the power-supply unit will not start up. This may be due to a defective component drawing too much current from the power-supply unit.

3. If TR61 is short circuited, the power-supply unit will be unable to start up. The voltage at C83 will be approx. 6V.

4. If the voltage at C95 is not a DC voltage but looks as illustrated below, the overload protection circuit, TR91 etc., will be active. Maybe an electrolyte or a diode on one of the supply voltages is short circuited, or the power-supply unit may be subject to an excessive load. The same error will occur if L91 is disconnected.



5. Disconnect drain at TR41 (disconnect J5). Connect an external DC supply of 15-20V to C83, and connect the TV to the mains voltage. The oscillator should now be running at 20 kHz. The voltage at C95 should be approx. 1.3V DC, and not as illustrated above.
   A square-wave voltage should now be present at the collector of TR83. The square-wave voltage is amplified in TR84 and applied to the gate of TR41.

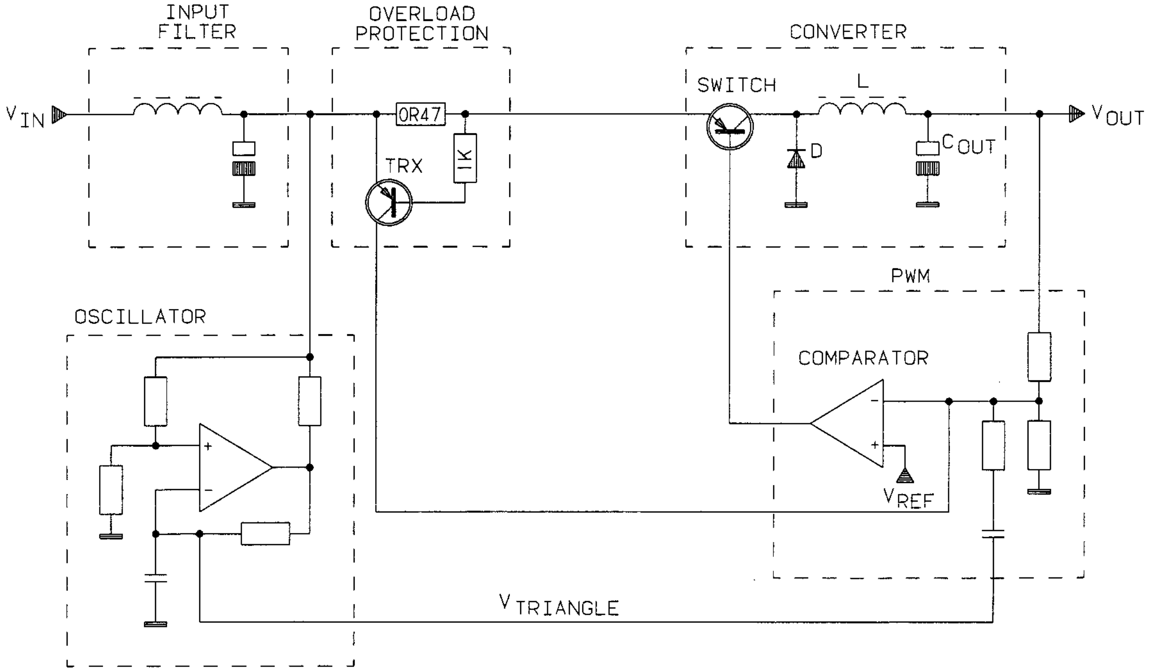


6. If the TV will not start up in audio mode from ST BY, check that pin 2 on P42 goes high.

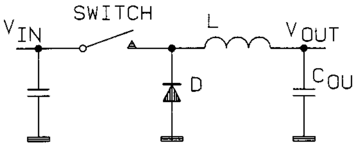
50 kHz SMPS

The BeoVision Avant contains three small SMPS power-supply units. They are placed on AV switch PCB14, Satellite PCB20 and Dolby Surround PCB30 respectively.
The three SMPS's are designed according to three different principles, yet they have the following features in common:

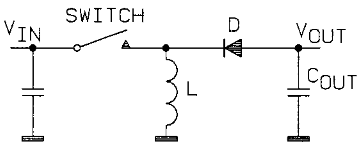
- Oscillator.
- Feedback/pulse-width modulator (PWM).
- Input filter.
- Overload protection circuit.
- Converter (switch).


INPUT FILTER
OVERLOAD PROTECTION
CONVERTER
VIN
0R47
TRX
1K
SWITCH
L
D
COUT
VOUT
PWM
COMPARATOR
VREF
OSCILLATOR
VTRIANGLE

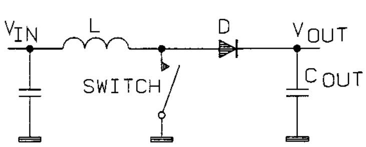
The three principles are illustrated below:


VIN
SWITCH
L
VOUT
D
COUT

BUCK CONVERTER/
STEP DOWN


VIN
SWITCH
D
VOUT
L
COUT

FLYBACK CONVERTER


VIN
L
D
VOUT
SWITCH
COUT

BOOST CONVERTER/
STEP UP

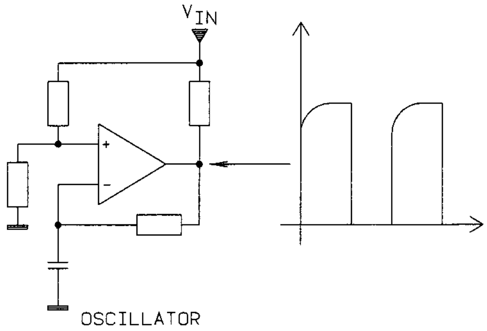
Error tips for the converter

- Defective switch → No Vout, or Vout = Vin
- Defective diode → No Vout, or Vout = Vin

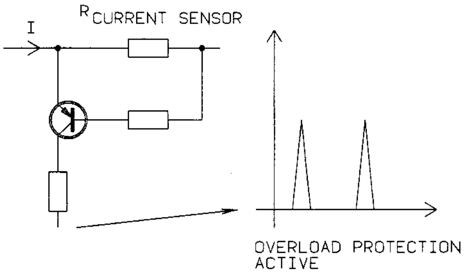
General troubleshooting tips

1. Check the voltage at the collector of the switch transistor. It should be a square-wave voltage, perhaps with some ringings. The frequency of the pulses is approx. 50 kHz. If a DC voltage is present, the SMPS does not operate. The oscillator, switch transistor or converter diode may be defective.

2. Check that the oscillator is operating at approx. 50 kHz. If not, there may be an error in the oscillator, or the overload protection circuit may be active. The oscillator in all of the small SMPS's are designed in the same way, over a comparator.



3. Check whether the overload protection circuit is active. If it is active, that may be due to an excessive load, or a defective component in the SMPS. Disconnect the load to check where the error is. The overload protection circuit generates a pulse when the current in the switch transistor becomes too great. When this happens, the switch transistor is disconnected, and it is not switched back on again until a period of approx. 20µs has elapsed.



SERVICE-EINSTELLUNGEN MIT Beo4

BeoVision Avant bietet Wahlmöglichkeiten für sechs verschiedene Bildformate mit Hilfe des Fernbedienungsterminals Beo4. Wenn eines der Bildformate gewählt worden ist, können die Parameter für Bild- und Geometrie-einstellungen im Modus 'Service mode' gespeichert werden. Es sind jeweils die separaten Parameter für die sechs Formate zu speichern. Siehe hierzu den Abschnitt 'Brief Operation Guide' (im folgenden B.O.G. genannt) bezüglich der allgemeinen Bedienung.

Reset

Helligkeit (Brilliance), Farbsättigung (Colour) und Kontrast (Contrast) auf ihre Nominalwerte einstellen, so daß diese Werte mit der Taste *RESET* wieder aufrufbar sind (vielleicht ADD-Funktion, siehe B.O.G.).

- Tastenbetätigung: TV MENU 5 (oder 4) 3

Brilliance	Colour	Contrast
32	32	44

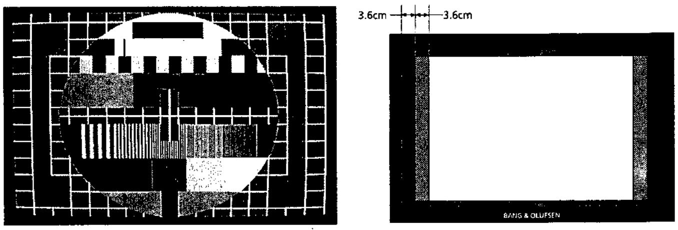
- Mit den Tasten ◀◀, ▶▶, ▲ oder ▼ einstellen, und mit der Taste STOP rückwärtsschalten. Werte evtl. mit der Taste GO speichern.

Format

Die sechs verschiedenen Bildformate erfordern jeweils ihre eigene Einstellung im Modus 'Service mode'. Das Format wird mit einem Fernbedienungsterminal Beo4 gewählt:

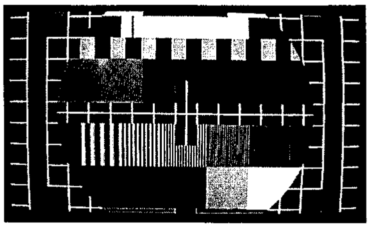
- Ein Standard-4:3-Testbild (z.B. Philips) anschließen:
- TV drücken und solange auf LIST drücken, bis im Display *FORMAT* erscheint.
- 1 zeigt ein Bang & Olufsen-optimiertes 14:9-Breitwandbild bei Anschluß eines Standard-4:3-Signals:

FORMAT 1



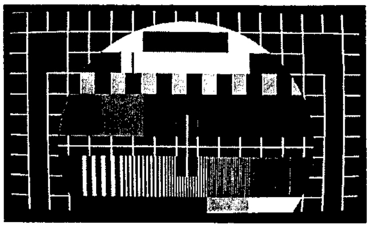
- 2 zeigt ein volles 16:9-Breitwandbild bei Anschluß eines Standard-4:3-Signals mit schwarzem Streifen (Balken) am oberen und unteren Bildrand:

FORMAT 2



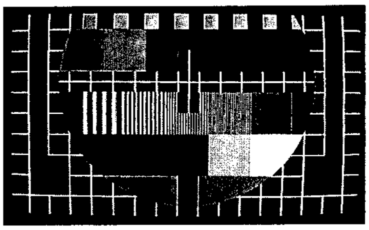
- 3 zeigt ein volles 16:9-Breitwandbild bei Anschluß eines Standard-4:3-Signals mit schwarzem Streifen (Balken) am unteren Bildrand:

FORMAT 3



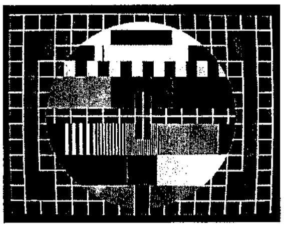
- 4 zeigt ein volles 16:9-Breitwandbild bei Anschluß eines Standard-4:3-Signals mit einem schwarzen Streifen (Balken) am oberen Bildrand:

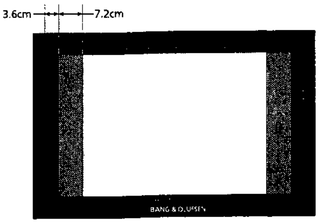
FORMAT 4



- 5 zeigt ein Standard-4:3-Bild bei Anschluß eines Standard-4:3-Signals:

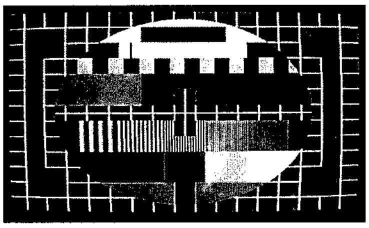
FORMAT 5



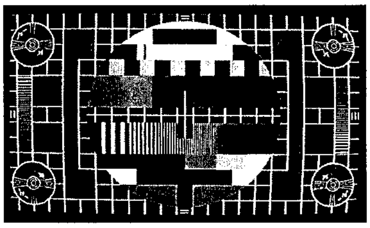


- 6 zeigt ein volles 16:9-Breitwandbild bei Anschluß eines Widescreen- oder Breitbild-16:9-Signals:

FORMAT 6 4:3



FORMAT 6 16:9



Service mode

Das TV-Gerät in SERVICE MODE bringen, wenn das gewünschte Format gewählt worden ist, um Zugang zum 'Service menu' zu bekommen:

- Tastenbetätigung: TV MENU und anschließend die 'Setup'-Zeile mit der Taste ▼ wählen und dann GO 0 0 GO drücken.

Service menu

1 Monitor
2 TV-tuner
3 V.Tape

- 1 drücken, um Zugang zu den 'Monitor'-Einstellungen zu bekommen.

Monitor service menu

1 Monitor information
2 Service counters
3 Picture adjustments
4 Geometry adjustments
5 Text Registers

Bildeinstellungen

- 3 im 'Monitor service menu' drücken, um Zugang zu den Bildeinstellungen (Picture adjustments) zu bekommen:

Picture adjustments

1 Rdr XX	Red drive 0 - 63
2 Gdr XX	Green drive 0 - 63
3 Rcu XX	Red cut-off balance 0 - 63
4 Gcu XX	Green cut-off balance 0 - 63

- Ein Standard-4:3-Testbild (z.B. Philips) an das gewählte Format anschließen.
- Bildeinstellung mit den Ziffern (1 - 4) wählen und mit ▲ oder ▼ einstellen. Während des Einstellvorgangs ist es möglich, eine neue Bildeinstellung mit ◀◀ oder ▶▶ zu wählen. Die Einstellung mit GO speichern und evtl. eine neue Einstellung wählen, - oder das Menü mit STOP beenden. Zum Verlassen der Service-Menüs die Taste EXIT drücken.

Treiber (Drive)

- Helligkeit auf Nominalwert einstellen: Brilliance 32.
- Farbsättigung entfernen: 00.
- Roten und grünen Treiber ('Rdr' und 'Gdr') auf korrekten Weißton einstellen.

Sperrpunkt-Balance (Cut-off-balance)

- Helligkeit auf Nominalwert einstellen: Brilliance 32.
- Farbsättigung entfernen: 00.
- Rote und grüne 'Cut-off'-Balance ('Rcu' und 'Gcu') so lange abgleichen, bis die dunklen Felder im Testbild farblos sind.

Geometrieeinstellungen

- 4 im 'Monitor service menu' drücken, um Zugang zu den Geometrieeinstellungen (Geometry adjustments) zu bekommen:

Geometry adjustments

1	Hph XX	Horizontal phase 0 - 63
2	Ham XX	Horizontal amplitude 0 - 63
3	Vam XX	Vertical amplitude 0 - 63
4	Vsc 00	Vertical s-correction 0 - 63
5	Vsh 31	Vertical shift/centering 0 - 63
6	Vsl XX	Vertical slope 0 - 63
7	EWc XX	East/West corner 0 - 63
8	EWp XX	East/West parabola 0 - 63
9	EWt XX	East/West tilt 0 - 63

- Ein Standard-Testbild (z.B. Philips) an das gewählte Format anschließen.
- Geometrieeinstellung mit den Ziffern (1 - 9) wählen und mit ▲ oder ▼ einstellen. Während des Einstellvorgangs ist es möglich, eine neue Geometrieeinstellung mit ◀◀ oder ▶▶ zu wählen. Die Einstellung mit GO speichern und evtl. eine neue Einstellung wählen, - oder das Menü mit STOP beenden. Zum Verlassen der Service-Menüs die Taste EXIT drücken.

Horizontal-Zentrierung/Phase (Hph)

- Helligkeit (Brilliance) auf Maximalwert einstellen: Brilliance 62.
- Horizontal-Amplitude auf Minimalbreite einstellen: Ham 00.
- Erforderlichenfalls das Bild bestmöglich mit 5S7 (Koordinate 7G) im Bildformat 6 zentrieren (siehe hierzu den Punkt 'Format').
- Die Bildzentrierung mit Horizontal-Phase (Hph) nachstellen.
- Horizontal-Amplitude (Ham) auf korrekte Breite einstellen (siehe hierzu den Punkt 'Format').
- Evtl. Horizontal-Phase (Hph) nachstellen.

Horizontal-Amplitude (Ham)

- Horizontal-Amplitude (Ham) auf die korrekte Breite einstellen (siehe hierzu den Punkt 'Horizontal-Zentrierung/Phase' (Hph)). Es gibt einen schwarzen Streifen (Balken) auf beiden Seiten des sichtbaren Bildes in den Bildschirm-Formaten:
  Format 1 (14:9) = 3,6 cm/1,42" auf jeder Seite.
  Format 5 (4:3) = 7,2 cm/2,84" auf jeder Seite.

Vertikal-S-Korrektur (Vsc)

- Vertikal-S-Korrektur auf 0 (Vsc 00) einstellen (in allen Formaten).

Vertikal-Zentrierung (Vsh)

- Vertikal-Zentrierung auf 31 (Vsh 31) einstellen (in allen Formaten).

Vertikal-Amplitude (Vam)

- Vertikal-Amplitude (Vam) so einstellen, daß das Bild oben paßt (siehe hierzu den Punkt 'Format').

Vertikal-Slope (Vsl)

- Vertikal-Slope/Rampe (Vsl) so einstellen, daß das Bild unten paßt (siehe hierzu den Punkt 'Format'). Die Vertikal-Amplitude (Vam) wird hierdurch beeinflußt.

Ost-West-Ecken (E/Wc)

- Ost-West-Ecken (E/Wc) auf korrekte Eckengeometrie einstellen.

Ost-West-Parabel (E/Wp)

- Ost-West-Parabel (E/Wp) auf korrekte Seitengeometrie einstellen.

Ost-West-Tilt (E/Wt)

- Ost-West-Tilt (E/Wt) auf korrekte Geometrie einstellen.

EINSTELLUNGSANWEISUNGEN

Bei den folgenden Einstellungen ist das Gerät - falls nichts Gegenteiliges angeführt ist - an ein Farbtestbild anzuschließen.
Es müssen die erforderlichen Service-Einstellungen mit Hilfe des Fernbedienungsterminals bereits vorgenommen worden sein.

Modul 2 'Video/Chroma & Teletext'
4,43-MHz-Farbträgerfalle (Saugkreis)

- Ein PAL-Farbbalken-Testbild anschließen.
- Ein Oszilloskop an Anschluß 17 des 2IC2 TDA4565 (Koordinate 6I) anschließen. Masse an Anschluß 18 des 2IC2.
- Mit 2L1 (Koordinate 5G) auf minimalen 4,43-MHz-Reste im Signal abgleichen. Diese Einstellung hat mit einem nicht-magnetischen Justierwerkzeug zu erfolgen.

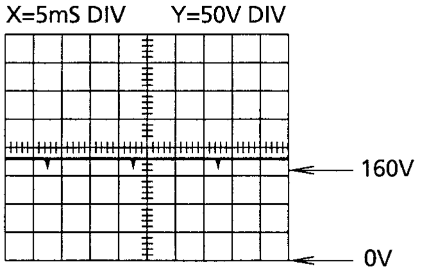
Modul 5 'Deflection & EHT'
Fokussierung

- Helligkeit und Farbsättigung auf Nominalwerte (32/32) einstellen.
- Kontrast auf Maximalwert (62) einstellen.
- Auf bestmögliche Fokussierung (Bildschärfe) - ca. 10 cm/4" vom Bildschirmrand gesehen - mit Hilfe des Fokussierpotentiometer 5R50 (FOCUS) abgleichen.

G2 (Cut-off)

- Helligkeit auf Nominalwert (32) einstellen.
- AV-Stecker von der V.TAPE-Anschlußbuchse entfernen und V TAPE drücken.
- Mit Hilfe eines Oszilloskops den Meßpunkt der Widerstände 3R1, 3R2 oder 3R3 (Oszilloskop Bild Nr. 99) ermitteln, der die höchste Meßpulsspannung ergibt.
- Mit dem G2-(SCREEN)-Potentiometer 5R50 so lange abgleichen, bis die Meßpulsspannung bei 160 VDC liegt (absoluter Maximalpegel).
- Nach Beenden des Einstellvorgangs den AV-Stecker an die V.TAPE-Anschlußbuchse anschließen.

(99)



Alternatives G2-Einstellverfahren

Zum Erzielen einer genauen Einstellung sollte für die Einstellung unbedingt ein Oszilloskop benutzt werden.
- Helligkeit und Kontrast auf Nominalwerte (32) einstellen.
- AV-Stecker von der V.TAPE-Anschlußbuchse entfernen und V TAPE drücken.
- 58PE1 (Foto-Transistor) auf der Platine 'PCB 58 Display & IR' zudecken.
- Mit einem Voltmeter (Ri > 1Mohm) den Spannungsabfall über 3R1, 3R2 und 3R3 messen.
- Mit Hilfe des G2-Potentiometers 5R50 so lange abgleichen, bis eine Spannung von 2 V über denjenigen der Widerstände 3R1, 3R2 oder 3R3 gemessen wird, der den geringsten Spannungsabfall aufweist.
- Nach Beenden des Einstellvorgangs den AV-Stecker an die V.TAPE-Anschlußbuchse anschließen.

Module 30 'Dolby Processing'
Verstärkung

Eine Einstellung soll nur im Zusammenhang mit einem Austausch der Komponenten 30IC8, 30C1, 30C18, 30C19, 30C12, 30C13, 30C134 erfolgen.

- Den SMD-Widerstand 30R23 (Koordinate 2B) entfernen/anheben.
- Einen Tongenerator an die Lötstelle des 30R23, die zum Anschluß 53 des 30IC8 führt, über einen 10µF-Elektrolytkondensator mit + gegen die Lötstelle zeigend (siehe hierzu Bild Seite 5-1) anschließen. Masse an 'Power Link', Anschluß 2.
- Den Tongenerator zur Abgabe von 5 kHz, ca. 200 mV RMS einstellen.
- Ein AC-Voltmeter an die Lötstelle des 30R23, die zum Anschluß 53 des 30IC8 führt (AF Surround Input) anschließen, den Pegel messen und notieren.
- Das AC-Voltmeter an 30R10 (AF Surround Output) anschließen und mit 30C134 so lange abgleichen, bis der gleiche Pegel am 30R10 (Output) gemessen wird, wie am 30R23 (Input) gemessen wurde.
- Die Messung der Verstärkung mit einer Genauigkeit von ±3dB bei den Frequenzen 3 kHz und 1 kHz wiederholen bzw. überprüfen.
- Den Widerstand 30R23 erneut montieren.

Modul 40 'Picture in Picture'
'Cloche'-Filter

- Ein SECAM-Testbild (Vertikal-Farbbalken) anschließen.
- Mit 40L1 so lange abgleichen, bis optimale Farbübergange im Farbbalken erzielt werden.
- Abschließend ein SECAM-Testbild (Horizontal-Farbbalken) zwecks Kontrolle anschließen und mit Hilfe eines Oszilloskops überprüfen, ob alle Farbbalken den gleichen Pegel aufweisen.

Modul 10 'Output Amplifier' Einstellen des Tiefen/Höhen-Lautsprecherpegels

Diese Einstellung soll nur nach Austausch der Komponenten 10IC1, 10R58, 10R59 oder einer der Lautsprechereinheiten durchgeführt werden. Modul 10 'Output Amplifier' ist gleich für den rechten und den linken Kanal.

Die neue Lautsprechereinheit besitzt auf der Rückseite einen aufgedruckten Meßwert; dieser Wert ist bei der Einstellung zu benutzen.

- Den AV-Stecker von der V.TAPE-Buchse entfernen und einen Tongenerator anschließen:

AV-Stecker:	14P21 Anschluß 2	Audio R (rechts) ein
	14P21 Anschluß 4	Audio Masse
	14P21 Anschluß 6	Audio L (links) ein

- V.TAPE drücken und solange auf LIST drücken, bis im Display *SPEAKER* erscheint, danach 1 drücken (Sound mode 1 - Gerätelautsprecher).
- Die Klangeinstellungen des TV-Gerätes 'Bass', 'Treble', 'Balance' müssen ungeregelt sein (0), und 'Loundness' muß abgeschaltet sein (Off). Tastenbetätigung: MENU 5 (oder 4) 2 1 und mit ▶▶, ◀◀, ▼ oder ▲ einstellen.
- Ein AC-Voltmeter an Anschluß 3 des 10P57 anschließen.
- Falls der *Höhenpegel* einzustellen ist, ist ein Signal von 10 kHz anzuschließen, und der Pegel am Eingang 10P57-3 wird mit Hilfe des Tongenerator-Ausgangspegels und mit den Lautstärketasten ∧ oder ∨ auf Beo4 auf 250 mV eingestellt.
- Falls der *Tiefenpegel* einzustellen ist, ist ein Signal von 1 kHz anzuschließen, und der Pegel am Eingang 10P57-3 wird mit Hilfe des Tongenerator-Ausgangspegels und mit den Lautstärketasten ∧ oder ∨ auf Beo4 auf 250 mV eingestellt.
- Ein AC-Voltmeter über den Ausgang der aktuellen Einheit anschließen (die Lautsprechereinheiten brauchen während des Einstellvorgangs nicht angeschlossen zu sein):

Tiefen (Bass):	10P60-1	Bass out
	10P60-2	N.C.
	10P60-3	Bass ground
Höhen (Treble):	10P60-4	Treble out
	10P60-5	Treble ground

- Jetzt so lange abgleichen, bis die Spannung am Lautsprecherausgang mit der Spannung in der nachstehenden Lautsprecherpegel-Tabelle mit Hilfe des auf der Rückseite der Lautsprechereinheit aufgedruckten Wertes übereinstimmt.

Tiefen-Einstellung: 10R59 (Koordinate 1E)
Höhen-Einstellung: 10R58 (Koordinate 1D)

Aufgedruckter dB-Wert	Tiefen (Bass)	Höhen (Treble)
+2,00 dB	1,41 V	2,04 V
+1,75 dB	1,46 V	2,10 V
+1,50 dB	1,50 V	2,16 V
+1,25 dB	1,54 V	2,23 V
+1,00 dB	1,59 V	2,29 V
+0,75 dB	1,63 V	2,36 V
+0,50 dB	1,68 V	2,43 V
+0,25 dB	1,73 V	2,50 V
0,00 dB	1,78 V	2,57 V
- 0,25 dB	1,83 V	2,65 V
- 0,50 dB	1,88 V	2,72 V
- 0,75 dB	1,94 V	2,80 V
- 1,00 dB	2,00 V	2,88 V
- 1,25 dB	2,06 V	2,97 V
- 1,50 dB	2,12 V	3,05 V
- 1,75 dB	2,18 V	3,14 V
- 2,00 dB	2,24 V	3,24 V

Austausch von Modul 10 'Output Amplifier'

Nach Austausch des Moduls 10 'Output Amplifier' sind die Ausgänge (Tiefen und Höhen) auf den Nominalwert (0,00 dB) entsprechend des Einstellvorgangs für das 'Einstellen des Tiefen/Höhen-Lautsprecherpegels' abzugleichen. Modul 10 'Output Amplifier' ist gleich für den rechten und den linken Kanal.

Modul 12 'IF'

Eine Einstellung soll nur nach Austausch von Modul 12 'IF' oder 12IC4 TDA9815 (Koordinate 2A) durchgeführt werden.

Test-Stecker 1P89:

Anschluß 1	Masse (Ground)
Anschluß 2	5 V
Anschluß 3	'LF' links (CH SEP)
Anschluß 4	V_{AFC}
Anschluß 5	'LF' rechts
Anschluß 6	V_{AGC} Takeover

- Ein Antennensignal von bekannter Frequenz (XXX.25 MHz), das A2-Stereoton-Modulation enthält, anschließen.
- Im 'TV service setup'-Menü AFC 'Off' wählen; Tastenbetätigung: TV MENU 5 (oder 4) 0 0 GO 2 ▶▶ ▼ GO.
- 'TV tuning'-Menü wählen; Tastenbetätigung: STOP 1 1 oder TV MENU 5 (oder 4) 1 1.
- Den Tuner auf die bekannte Frequenz einstellen; Tastenbetätigung: X X X (Zifferneingabe) ▶▶, und eine Programmnummer mit X X GO wählen.

Automatische Verstärkungsregelung (AFC)

- Ein DC-Voltmeter an Anschluß 4 (V_{AFC}) des 1P89 anschließen.
- Mit 12L5 (Koordinate 2B) mittels eines nicht-magnetischen Trimmschlüssels so lange abgleichen, bis die Spannung am 1P89-4 (V_{AFC}) = 1,95 V ± 0,1 V.

'AGC Takeover'

- Den Antennensignalpegel auf 2 mV einstellen.
- Ein DC-Voltmeter an Anschluß 6 (V_{AGC} Takeover) des 1P89 anschließen.
- Mit 12R112 (Koordinate 2B) so lange abgleichen, bis die Spannung am 1P89-6 (V_{AGC} Takeover) = 7,3 V ± 0,1 V.

Kanaltrennung (CH SEP)

- Ein Oszilloskop an Anschluß 3 des 1P89 anschließen.
- Mit 12R113 (Koordinate 2B) auf minimales Übersprechen einstellen.

REPARATURTIPS
Service-Modus

Der Service-Modus setzt sich aus 2 Bereichen zusammen: 'Service menu' und 'Bus ignore mode'.

'Service menu'

Im Service-Menü besteht u.a. die Möglichkeit für Bild- und Geometrieeinstellungen; siehe hierzu den Abschnitt 'Service-Einstellungen mit Beo4'. In der folgenden Beschreibung wird das Beo4-Terminal für die Bedienung benutzt. Zugang zum Service-Menü:

- Tastenbetätigung: TV MENU und anschließend die 'Setup'-Zeile mit der Taste ▼ wählen und dann GO 0 0 GO drücken. Durch Drücken der Taste STOP ist es möglich, in den Menüs rückwärts zu schalten.

Zum Verlassen des Service-Modus die Taste ● drücken.

```
Service menu

1   Monitor
2   TV-tuner
3   V.Tape
```

Im Service-Menü kann die Quelle gewählt werden, über die Informationen benötigt werden, oder die nachzustellen/aufzustellen ist.

'Monitor' wählen: Tastenbetätigung 1

```
Monitor service menu

1   Monitor information
2   Service counters
3   Picture adjustments
4   Geometry adjustments
5   Text Registers
```

Im Monitor-Service-Menü kann zwischen den nachstehenden Informationen gewählt werden:
(Die Bild- und Geometrie-Einstellungen sind im Abschnitt über die Einstellungen beschrieben).

'Monitor information menu': Tastenbetätigung 1

```
Monitor information

06 IC1:     (AP) SW     1.0
14 IC13:    (FEP) SW    1.0
Type                    1811101
Serial no.              12345678
Last TV error           NO
Last ML/SL error        NO
```

- Software-Version Nr.
- Typ- und Serien-Nr.
- Last TV error
- Last ML/SL error

'Last Error'

Das TV-Gerät kann gewisse Fehlertypen erkennen und diese im Bildschirmmenü darstellen.

Der erste Fehlercode bezieht sich auf TV-Fehler.
Es können die folgenden Fehlertypen dargestellt werden:
Last TV error NO = Keine Fehlerregistrierung.
Last TV error xx - 1 = Fehler I^{2}C-Bus 1.
Last TV error xx - 2 = Fehler I^{2}C-Bus 2.
Last TV error DF = Datenfehler (EEPROM 6IC4 möglicherweise fehlerhaft).
Last TV error PF = 'Power Fail' (TDA9162 2IC7 kann im TV-Modus nicht anlaufen).

Der zweite Fehlercode bezieht sich auf Fehler im Master Link-System.
Es können die folgenden Fehlertypen dargestellt werden:
Last ML/SL error NO = Keine Fehlerregistrierung.
Last ML/SL error CI = Adreßkonfiguration unmöglich.
Last ML/SL error TD = 'ML Data' auf 'Low' gezogen.
Last ML/SL error TU = 'ML Data' auf 'High' gezogen.
Last ML/SL error — = Andere nicht-definierbare Fehlermöglichkeiten.

Nach Reparatur eines Fehlers, bei dem ein Fehlercode im Display angezeigt gewesen ist, ist der Fehlercode zu löschen. Dies erfolgt durch Drücken der Taste GO im 'Monitor information'-Menü.

I^{2}C-Busfehler

Ein I^{2}C-Busfehler bewirkt, daß die Kommunikation auf dem Bus ausfällt, wenn der Mikrocomputer versucht, mit der betreffenden Adresse zu kommunizieren. In den meisten Fällen bedeutet dies, daß der adressierte IC fehlerhaft ist, es können aber auch eine benachbarte Komponente des IC oder andere Komponenten auf dem Bus fehlerhaft sein.

Adressen bei I^{2}C-Busfehlern:
'Last error' auf Bus 1

D0 - 1	14IC40, MK41T56 Zeituhr.
88 - 1	2IC4, TDA4680 Videoprozessor.
8A - 1	2IC7, TDA9162 Farbdetektor & Synk.-Prozessor.
4A - 1	41IC2, PCF8574 I^{2}C I/O-Expander.
2E - 1	40IC5, SDA9188 Bild-im-Bild-Prozessor.

'Last error' auf Bus 2

C0 - 2	1TU1, TV-Tuner.
84 - 2	1IC3, TDA8417 A2-Stereo-Decoder.
B6 - 2	31IC7, CF70088 NICAM-Stereo-Decoder.
C6 - 2	20TU1, Satelliten-Tuner (SXT2001CDI).
C4 - 2	20TU1, Satelliten-Tuner (SXT2041CD).
22 - 2	2IC6, SDA5273 Videotext-(Teletext)-Decoder.
80 - 2	14IC10, TDA7314S Klangregelungen.
90 - 2	14IC3, TEA6425 Videoschalter.
94 - 2	14IC4, TEA6425 Videoschalter.
96 - 2	14IC2, TEA6425 Videoschalter.
88 - 2	30IC7, TDA7318 Tonprozessor.
4C - 2	30IC4, PCF8574 I^{2}C I/O-Expander.
4E - 2	30IC3, PCF8574 I^{2}C I/O-Expander.

Datenfehler (Data failure)

Falls im EEPROM (6IC4) ein Fehler entsteht, so daß es nicht möglich ist, Geometrie- und Bilddaten für das TV-Gerät auszulesen, wird der Mikrocomputer die fehlenden Daten durch 'Default'-Daten ersetzen, die im PROM (6IC1) gespeichert sind.

Stromunterbrechung (Power fail)

Falls 2IC7 (TDA9162) im Video-Modus nach 20 Versuchen nicht anlaufen kann, wird das TV-Gerät abgeschaltet. Diese Situation kann auf etwaige Fehler in den Ablenkschaltkreisen zurückzuführen sein.

'Last ML/SL error CI'	Fehler bei der Adreßkonfiguration. Keine Adreßzuordnung, weil an das Link zu viele Einheiten angeschlossen worden sind. - Alle Einheiten vom Link trennen und sie wieder eine nach der anderen anschließen. Dabei nicht vergessen, daß dies ebenfalls für das 6polige Flachkabel zwischen TV-Gerät und VTR-Einheit gilt.
'Last ML/SL error TD'	Das Link wurde auf 'Low' gezogen. Dieser Fehler kann infolge eines physischen Kurzschlusses im Link, in den Link-Treibern oder im ML 'Master/Source'-Schaltkreis des TV-Gerätes entstehen. - Überprüfen, ob am Anschluß 15 des 14IC13 (ML M/S) Impulse vorhanden sind. Die Frequenz muß bei ca. 1,5 ms liegen (TV-Gerät Master). - Die Einheiten jeweils eine nach der anderen vom Link trennen und gleichzeitig überprüfen, ob über das Link kommuniziert wird. Dabei nicht vergessen, daß dies ebenfalls für das 6polige Flachkabel zwischen TV-Gerät und VTR-Einheit gilt.
'Last ML/SL error TU'	Das Link wurde auf 'High' gezogen. Der Fehler ist entweder auf einen zu niedrig gewordenen 'Pull-up'-Widerstand des Systems oder auf eine Störung der Link-Treiber zurückzuführen. - Das TV-Gerät von der externen Link-Verknüpfung trennen. Auch das 6polige Flachkabel zwischen TV-Gerät und VTR-Einheit unterbrechen. Dann das TV-Gerät einschalten und überprüfen, daß ein Telegramm von ca. 15 ms, gemessen am Anschluß 13 des 14IC13 (ML TRANSMIT), innerhalb von 3-4 Sekunden hinausgegeben wird. Es sollte möglich sein, dasselbe Signal am Anschluß 14 des 14IC13 (ML RECEIVE) zu messen - jedoch mit einer Verzögerung von 10-15 µs.

'Text Registers' im 'Monitor service menu' wählen: Tastenbetätigung **5**

```
Test Register setup

R01  R02  R03  R04  R05  R06  R07  R08
 5    11   0    0    0    0    0    0
R09  R10
 0    0
```

Gruppenlaufzeitfehler können in gewissen Kabelantennenanlagen den Empfang von Videotext (Teletext) stören. Diese können verhindert werden, falls in Reihe mit dem CVBS-Signal für den Videotext-Decoder ein Filter eingesetzt wird.
Bei den Ziffern unter den Register-Nummern R01 - R10 handelt es sich um Programmnummern. Sind alle Ziffern = 0, sind bei keiner der Programmnummern Filter eingesetzt worden.
Ist das Einsetzen eines Filters bei einer Programmnummer erwünscht, wird ein Register durch Drücken von ◀◀ / ▶▶ gewählt, gefolgt von der gewünschten Programmnummer. Zum Beenden ist die Taste **GO** zu drücken.
In dem gezeigten Beispiel wurden Filter bei Programm 5 und 11 eingesetzt. Das Filter wird erst beim nächstfolgenden Schalten zum betreffenden Programm eingeschaltet.

'Service counters' im 'Monitor service menu' wählen: Tastenbetätigung
2

```
Monitor service counters

Standby (days)        0000
Audio mode (days)     0000
Video mode (days)     0000
On/Off (times ★ 10)   0000
```

'On/Off (times ★ 10)' zeigt an, wie oft das TV-Gerät in 'Standby' geschaltet wurde. Die Zahl wird in ganzen 10'ern angegeben. Enthält die Zahl mehr als 4 Ziffern, so werden die 4 niederstwertigen Ziffern angegeben (z.B. 12834 wird als 2834 angegeben).
Die anderen im Menü dargestellten Zeiten werden in ganzen Tagen angegeben.

'TV-tuner' im 'Service menu' wählen: Tastenbetätigung 2

```
TV service setup

Tuner system              AFC
1                         On

Low tuning range          High tuning range
45                        860

Lower band limit          Upper band limit
170                       450

Vhf-1 const     Vhf-2 const     Uhf const
162             148             49
```

Im 'TV service setup'-Menü sind nur die 'Tuner system'- und 'AFC'-Felder zu benutzen. Die übrigen Felder sind für werkseitige Zwecke bestimmt, und die darin enthaltenen Werte dürfen nicht geändert werden.
'Tuner system':
Der Zahlenwert in diesem Feld gibt an, für welches CTV-System der betreffende ZF-Teil vorgesehen ist.
Falls die 'Tuner & ZF'-Platine (PCB) zwecks Empfangs eines anderen CTV-Systems ausgetauscht wird, muß der Zahlenwert geändert werden.
Die Zahlenwerte für die verschiedenen Systeme sind die folgenden:
B/G = 1
L/L' = 2
M = 4
D/K = 8
I = 16
Der Zahlenwert für Systemkombinationen erhält man durch Addieren der diesbezüglichen Werte.
Die Zahlenwerte für die ZF-Varianten im BeoVision Avant sind die folgenden:
B/G = 1
B/G/L/L' = 3
I = 16
B/G/L/L'/I = 19
B/G/M/D/K/I = 29
Der Zahlenwert wird mit der Taste GO gespeichert.

'AFC On/Off' ist für Einstellungen vorgesehen, kann aber auch in anderen Situationen nützlich sein. Zum Bewegen des Cursors die Tasten ◀◀ / ▶▶ drücken. Zum Schalten zwischen 'On/Off' die Tasten ▲ / ▼ drücken.
'AFC Off' kann nicht gespeichert werden. Nach 'Standby' befindet sich AFC immer in Stellung 'On'.

'V.Tape' im 'Service menu' wählen: Tastenbetätigung 3; danach 'Information' im 'V.Tape service menu' wählen: Tastenbetätigung 1.
Im 'V.Tape information menu' kann man u.a. die Software-Version des VTR sehen.

Der 'V.Tape service'-Modus ist in der Serviceanleitung für BeoVision Avant VTR beschrieben.

'Bus ignore'-Modus

Falls ein Fehler im I²C-Bus-System entsteht, der bewirkt, daß das TV-Gerät bei jedem Einschaltversuch in 'Standby' schaltet, ist es möglich, das TV-Gerät so zu starten, daß der Fehler ignoriert wird:
- Das TV-Gerät muß in 'Standby' stehen.
- Die 2polige Steckverbindung P84 (ignore) koordinate 7M auf 'AV Switch PCB14' kurzschließen.
- Wenn es möglich ist, wird das TV-Gerät jetzt bei Ignorierung von Bus-Fehlern starten. Falls es nicht möglich ist, das TV-Gerät zu starten, ist der Fehler wahrscheinlich in 6IC3, 14IC13, 26IC3 (falls ein 'Positioner' montiert ist) oder in den benachbarten Komponenten der genannten IC's zu suchen.

Optionen

Das TV-Gerät ist für drei verschiedene Optionen programmierbar.

Option 0 = IR-Empfänger des TV-Gerätes abgeschaltet.

Option 1 = Video-System und Audio-System im selben Zimmer aufgestellt.

Option 2 = Video-System und Audio-System in verschiedenen Zimmern aufgestellt.

Programmierungsbeispiel mit Beo4:
- Das TV-Gerät muß in 'Standby' stehen.
- Die Taste ● gedrückt halten und LIST drücken, danach GO drücken und sooft LIST drücken, bis im Beo4-Display 'V.OPT' erscheint. Jetzt die Zahl für die gewünschte Option eingeben.

Werkseitig ist das Gerät für Option 1 programmiert.

Sound Output PCB10 & ABL PCB11

Bei Wartungsarbeiten an den Platinen 'Sound Output PCB10' und 'ABL PCB11' kann es vorteilhaft sein, das Kühlblech abzumontieren, weil es einige der Komponenten abdeckt. Der STK-Ausgangs-IC kann gefahrlos ohne Kühlblech bei niedriger Aussteuerung für eine kürzere Zeit betrieben werden.

SMPS auf PCB4

Bei Fehlern im Haupt-'SMPS'-Netzteil auf PCB4 können die nachstehenden praktischen Hinweise bei Reparaturarbeiten von Nutzen sein.

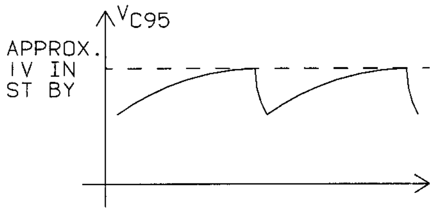
Falls TR41 fehlerhaft ist (was am schnellsten mit einem Ohm-Meter überprüft wird), sollten auch die Transistoren TR84, TR85 und TR86 ausgetauscht werden.
Falls TR41 nicht fehlerhaft ist, sollte folgendes überprüft werden:

1. Die Spannung am C4 muß über ca. 250 V liegen. Ist dies nicht der Fall, so kann die Sicherung oder D1 fehlerhaft sein.

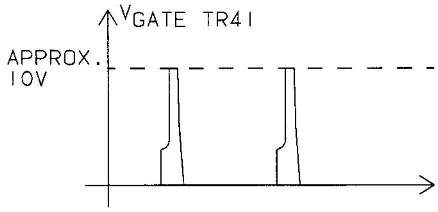
2. Die Versorgung am C83 sollte während des Anlaufvorgangs bei ca. 6 V liegen. Wenn die Spannung niedriger ist, wird das Netzteil nicht anlaufen. Der Grund mag sein, daß eine fehlerhafte Komponente von der Versorgung zu viel Strom zieht.

3. Falls TR61 kurzgeschlossen ist, kann das Netzteil nicht anlaufen. Die Spannung am C83 muß bei ca. 6 V liegen.

4. Falls die Spannung am C95 keine DC-Spannung ist, sondern wie unten dargestellt aussieht, wird der Sicherungsschaltkreis TR91 u.a.m. in Tätigkeit sein. Die Ursache hierfür kann sein, daß ein Elektrolyt oder eine Diode an einer der Versorgungsspannungen kurzgeschlossen ist, oder daß die Belastung des Netzteils zu hoch ist. Bei unterbrochener L91 tritt der gleiche Fehler auf.



5. 'Drain' des TR41 unterbrechen (J5 anheben). Eine externe DC-Versorgung von 15-20 V an C83 anschließen und das TV-Gerät ans Netz anschließen. Der Oszillator muß jetzt bei 20 kHz arbeiten. Es müssen ca. 1,3 V DC am C95 anliegen, und nicht wie oben dargestellt.
   Es muß jetzt eine Rechteckspannung am Kollektor des TR83 stehen. Die Rechteckspannung wird in TR84 verstärkt und anschließend dem Gate des TR41 zugeführt.

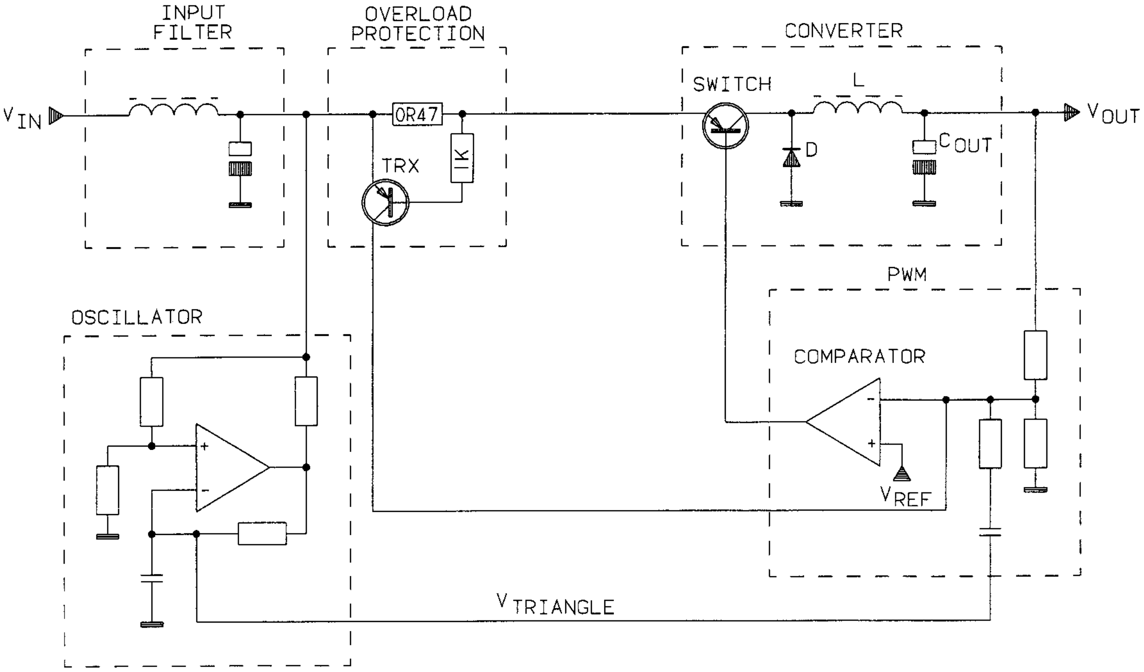


6. Falls das TV-Gerät nicht im Audio-Modus aus 'Standby' gestartet werden kann, ist zu überprüfen, daß Anschluß 2 des P42 auf 'High' schaltet.

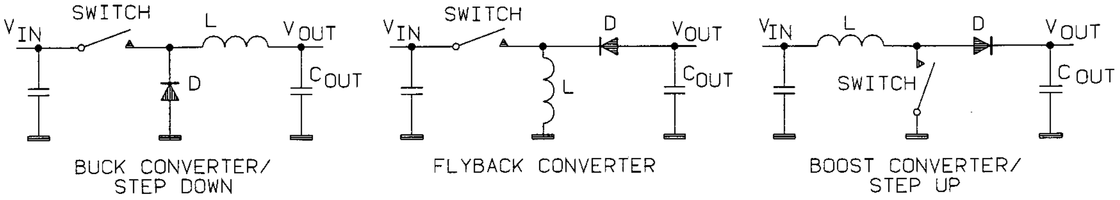
50 kHz SMPS

In BeoVision Avant sind drei kleine 'SMPS'-Netzteile vorgesehen. Sie befinden sich auf den Platinen 'AV Switch PCB14', 'Satellite PCB20' bzw. 'Dolby Surround PCB30'.
Der Aufbau der drei 'SMPS'-Netzteile basiert auf drei verschiedenen Prinzipien; sie weisen jedoch die folgenden gemeinsamen Grundzüge auf:

- Oszillator.
- Feedback/Impulsbreiten-Modulator (PWM).
- Eingangsfilter.
- Sicherungsschaltkreis.
- Konverter (Switch).


INPUT FILTER
OVERLOAD PROTECTION
CONVERTER
V_{IN}
0R47
IK
TRX
SWITCH
L
D
C_{OUT}
V_{OUT}
PWM
COMPARATOR
OSCILLATOR
V_{REF}
$V_{TRIANGLE}$

Die drei Prinzipien sind nachstehend gezeigt:


V_{IN}
SWITCH
L
V_{OUT}
D
C_{OUT}
BUCK CONVERTER/ STEP DOWN
V_{IN}
SWITCH
D
V_{OUT}
L
C_{OUT}
FLYBACK CONVERTER
V_{IN}
L
D
V_{OUT}
SWITCH
C_{OUT}
BOOST CONVERTER/ STEP UP

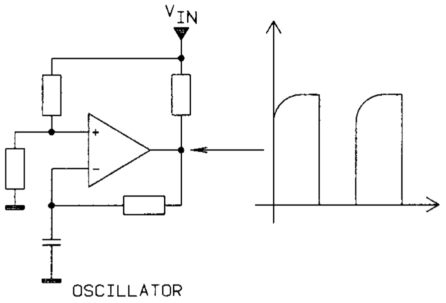
Fehlertips für den Konverter

- Fehlerhafter Schalter → Keine Vout oder Vout = Vin.
- Fehlerhafte Diode → Keine Vout oder Vout = Vin.

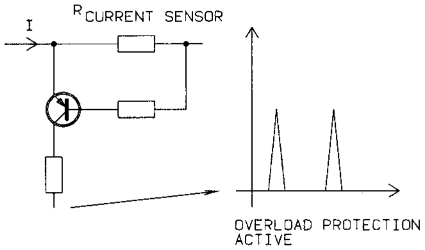
Allgemeine Fehlersuchtips

1. Die Spannung am Kollektor des Schalttransistors überprüfen. Hier muß eine Rechteckspannung anstehen, vielleicht mit einigen kleinen Schwingungen. Die Frequenz der Impulse liegt bei ca. 50 kHz. Falls hier eine DC-Spannung ansteht, arbeitet das 'SMPS'-Netzteil nicht.
   Der Oszillator, der Schalttransistor oder die Konverterdiode kann fehlerhaft sein.

2. Überprüfen, daß der Oszillator mit ca. 50 kHz arbeitet; ist dies nicht der Fall, kann der Oszillator fehlerhaft sein, oder der Sicherungsschaltkreis ist in Tätigkeit. Der Oszillator in allen kleinen 'SMPS'-Netzteilen ist identisch aufgebaut, und zwar mit einem Komparator.



3. Überprüfen, ob der Sicherungsschaltkreis in Tätigkeit ist. Ist dies der Fall, so kann dies auf zu hohe Belastung oder auf eine fehlerhafte Komponente im 'SMPS' zurückzuführen sein. Die Belastung unterbrechen, um festzustellen, wo der Fehler liegt. Der Sicherungsschaltkreis liefert einen Impuls, wenn der Strom im Schalttransistor zu hoch wird. Wenn dies geschieht, sperrt der Schalttransistor, und erst nach Verlauf von ca. 20 µs schaltet er wieder.



REGLAGES DE MAINTENANCE AVEC LE Beo4

La télécommande Beo4 du BeoVision Avant permet de sélectionner six formats d'image. Une fois le format choisi, les paramètres applicables aux réglages d'image et de géométrie peuvent être mémorisés dans le mode de maintenance. Les paramètres de chacun des six formats font l'objet d'une mémorisation spécifique. Se reporter le cas échéant au guide succinct de maintenance (désigné par l'abréviation B.O.G) pour l'utilisation générale.

Reset (remise à l'état initial)

Régler la luminosité, la saturation des couleurs et le contraste sur leurs valeurs nominales afin de pouvoir les rappeler à l'aide de la touche *RESET* (utiliser éventuellement la fonction ADD, voir B.O.G.) :

- Taper TV MENU 5 (ou 4) 3.

Brilliance	Colour	Contrast
32	32	44

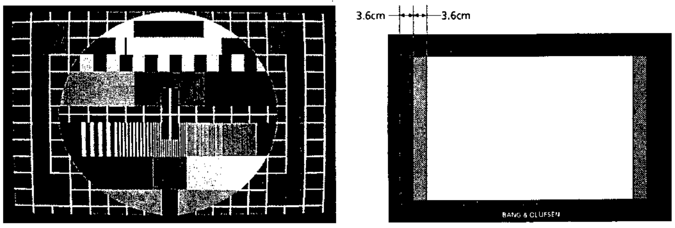
- Régler avec ◀◀, ▶▶, ▲ ou ▼, revenir en arrière avec STOP. Le cas échéant, mémoriser les valeurs en appuyant sur GO.

Format

Chacun des six formats d'image demande un réglage spécifique dans le mode de maintenance. La sélection du format s'effectue avec un Beo4 :

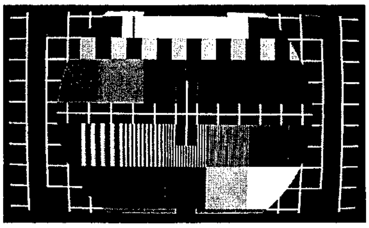
- Raccorder une mire standard 4/3 (p. ex. Philips).
- Taper TV et appuyer sur LIST jusqu'à ce que l'afficheur indique *FORMAT*.
- 1 montre une mire 14/9 Bang & Olufsen optimisée en présence d'un signal standard 4/3 :

FORMAT 1



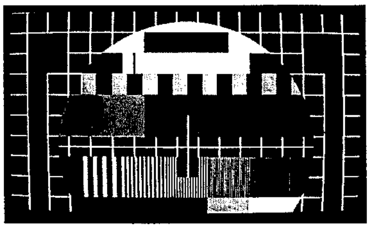
- 2 montre une mire 16/9 plein écran en présence d'un signal standard 4/3 (avec barre noire en haut et en bas) :

FORMAT 2



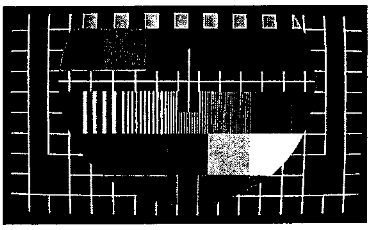
- 3 montre une mire 16/9 plein écran en présence d'un signal standard 4/3 (avec barre noire en bas de la mire) :

FORMAT 3



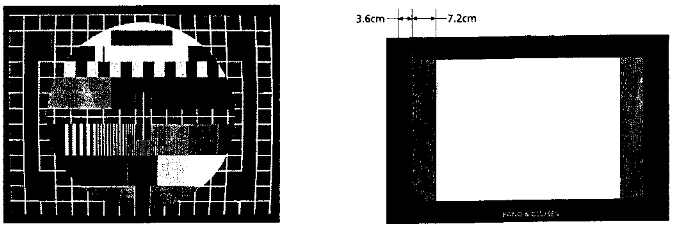
- 4 montre une mire 16/9 plein écran en présence d'un signal standard 4/3 (avec dans une barre noire en haut de la mire) :

FORMAT 4



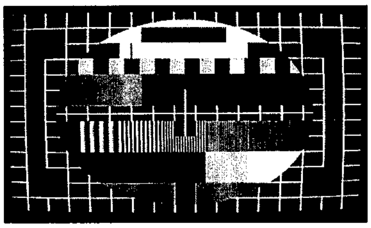
- 5 montre une mire 4/3 standard en présence d'un signal standard 4/3 :

FORMAT 5

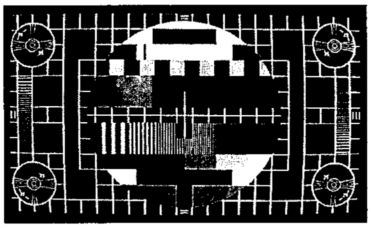


- 6 montre une mire 16/9 plein écran en présence d'un signal 16/9 écran large :

FORMAT 6 4/3



FORMAT 6 16/9



Service mode (mode de maintenance)

Après avoir sélectionné le format souhaité, amener le téléviseur en MODE DE MAINTENANCE pour accéder au menu de maintenance :

- Taper TV MENU, sélectionner l'option «Setup» avec la touche ▼ et entrer GO 0 0 GO.

Service menu

1 Monitor
2 TV tuner
3 V.Tape

- Taper 1 pour accéder aux réglages concernant le moniteur.

Monitor service menu

1 Monitor information
2 Service counters
3 Picture adjustments
4 Geometry adjustments
5 Text Registers

Picture adjustments (réglages de l'image)

- Taper 3 dans le menu de maintenance dédié au moniteur pour accéder aux réglages de l'image.

Picture adjustments

1 Rdr XX	Red drive 0 - 63
2 Gdr XX	Green drive 0 - 63
3 Rcu XX	Red cut-off balance 0 - 63
4 Gcu XX	Green cut-off balance 0 - 63

- Raccorder une mire standard 4/3 (p. ex. Philips) au format sélectionné.
- Sélectionner l'option souhaitée à l'aide des chiffres 1 à 4 et régler avec ▲ ou ▼. Ce faisant, il est possible d'opter pour un autre réglage d'image en appuyant sur ◀◀ ou ▶▶. Mémoriser le réglage effectué en appuyant sur GO, sélectionner un autre réglage ou sortir du menu en tapant STOP. Quitter les menus de maintenance en tapant EXIT.

Drive (signaux chroma)

- Régler la luminosité sur sa valeur nominale : «Brilliance 32».
- Régler la saturation des couleurs sur 00.
- Régler les signaux chroma rouge (Rdr) et vert (Gdr) sur le blanc de référence adéquat.

Cut-off balance (balance de coupure)

- Régler la luminosité sur sa valeur nominale (32).
- Régler la saturation des couleurs sur 00.
- Régler la balance de coupure des signaux rouge (Rcu) et vert (Gcu) pour que les zones foncées de la mire soient incolores.

Geometry adjustments (réglages de la géométrie)

- Taper 4 dans le menu de maintenance dédié au moniteur pour accéder aux réglages de la géométrie.

Geometry adjustments

1	Hph XX	Horizontal phase 0 - 63
2	Ham XX	Horizontal amplitude 0 - 63
3	Vam XX	Vertical amplitude 0 - 63
4	Vsc 00	Vertical s-correction 0 - 63
5	Vsh 31	Vertical shift/centring 0 - 63
6	Vsl XX	Vertical slope 0 - 63
7	EWc XX	East/West corner 0 - 63
8	EWp XX	East/West parabola 0 - 63
9	EWt XX	East/West tilt 0 - 63

- Raccorder une mire standard (p. ex. Philips) au format choisi.
- Sélectionner le réglage de géométrie souhaité à l'aide des chiffres 1 à 9 et régler avec ▲ ou ▼. Ce faisant, il est possible d'opter pour un autre réglage de géométrie en appuyant sur ◀◀ ou ▶▶. Mémoriser le réglage effectué en appuyant sur GO, sélectionner un autre réglage ou sortir du menu en tapant STOP. Quitter les menus de maintenance en tapant EXIT.

Centrage horizontal/phase (Hph)

- Régler la luminosité sur sa valeur max. : «Brilliance 62».
- Régler l'amplitude horizontale sur la largeur min. : Ham 00.
- Le cas échéant, centrer du mieux possible la mire du format 6 (voir paragraphe «Format») à l'aide de 5S7 (coordonnées 7G).
- Centrer la mire en corrigeant la phase horizontale (Hph) pour effectuer le réglage fin.
- Régler l'amplitude horizontale (Ham) sur la largeur adéquate (voir paragraphe «Format»).
- Corriger si nécessaire le réglage de la phase horizontale (Hph).

Amplitude horizontale (Ham)

- Régler l'amplitude horizontale (Ham) sur la largeur adéquate (voir paragraphe «centrage horizontal/phase (Hph)»). Une barre noire borde les deux côtés de la mire visible sur les formats suivants :
  Format 1 (14/9) = 3,6 cm/1,42" de chaque côté.
  Format 5 (4/3) = 7,2 cm/2,84" de chaque côté.

Correction S verticale (Vsc)

- Régler la correction S verticale sur 0 (Vsc 00) (pour l'ensemble des formats).

Centrage vertical (Vsh)

- Régler le centrage vertical sur 31 (Vsh 31) (pour l'ensemble des formats).

Amplitude verticale (Vam)

- Régler l'amplitude verticale (Vam) pour que le haut de la mire soit conforme aux indications du paragraphe «Format».

Pente verticale (Vsl)

- Régler la pente/rampe verticale (Vsl) pour que le bas de la mire soit conforme aux indications du paragraphe «Format». Ce réglage agit sur l'amplitude verticale (Vam).

Coins est/ouest (E/Wc)

- Régler les coins est/ouest (E/Wc) pour obtenir une géométrie correcte dans les coins.

Parabole est/ouest (E/Wp).

- Régler la parabole est/ouest (E/Wp) pour obtenir une géométrie correcte sur les côtés.

Distorsion est/ouest (E/Wt)

- Régler la distorsion est/ouest (E/Wt) pour obtenir une géométrie correcte.

GUIDE DE REGLAGE

Sauf mention contraire, raccorder une mire de couleurs standard pour effectuer les réglages suivants.
Il convient d'avoir effectué préalablement les réglages de maintenance avec la télécommande.

Module 2 «Video/Chroma & Teletext»

Filtre chroma 4,43 MHz

- Raccorder une mire de couleurs PAL.
- Raccorder un oscilloscope à la borne 17 de 2IC2 (TDA4565, coordonnées 6I). Mettre la borne 18 de 2IC2 à la masse.
- A l'aide d'un outil non magnétique, régler 2L1 (coordonnées 5G) pour obtenir une fréquence résiduelle minimale de 4,43 MHz dans le signal.

Module 5 «Deflection & EHT»

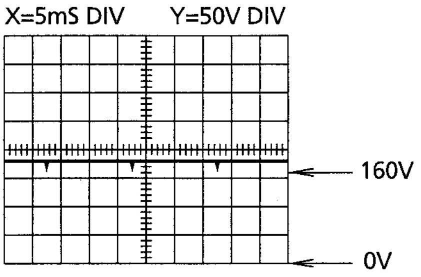
Concentration

- Régler la luminosité et la saturation des couleurs sur leurs valeurs nominales (32 et 32).
- Régler le contraste sur sa valeur maximale (62).
- Se placer à 10 cm/4" du bord de l'écran et régler, à l'aide du potentiomètre 5R50 (FOCUS), pour obtenir une concentration optimale.

G2 (Cut-off)

- Régler la luminosité sur sa valeur nominale (32).
- Débrancher la fiche A/V de la prise V.TAPE et appuyer sur V TAPE
- A l'aide d'un oscilloscope, définir le point de mesure de 3R1, 3R2 et 3R3 (oscillogramme n° 99) présentant la plus forte tension d'impulsion d'essai.
- Régler le potentiomètre 5R50 (SCREEN) G2 pour obtenir une tension continue d'impulsion d'essai de 160 V (niveau max. absolu).
- Rebrancher la fiche A/V dans la prise V.TAPE à l'issue du réglage.

(99)



Autre possibilité de réglage G2

Il est conseillé de suivre la procédure mettant en oeuvre un oscilloscope pour obtenir un réglage précis.

- Régler la luminosité et le contraste sur leurs valeurs nominales (32).
- Débrancher la fiche A/V de la prise V.TAPE et appuyer sur V TAPE
- Recouvrir la cellule 58PE1 (phototransistor) de la carte «Display & IR PCB 58».
- Utiliser un voltmètre (Ri > 1 Mohm) pour mesurer la chute de tension au travers de 3R1, 3R2 et 3R3.
- A l'aide du potentiomètre 5R50 G2, régler pour obtenir une tension de 2 V au travers de la résistance présentant la chute de tension la plus faible (3R1, 3R2 ou 3R3).
- Rebrancher la fiche A/V dans la prise V.TAPE à l'issue du réglage.

Module 30, traitement Dolby Gain

- Ne régler que lors du remplacement des composants suivants : 30IC8, 30C1, 30C18, 30C19, 30C12, 30C13 et 30C134.
- Déposer ou soulever la résistance 30R23 montée en surface (coordonnées 2B).
- Raccorder un oscillateur BF à la pastille de soudure de 30R23 reliée à la borne 53 de 30IC8. Pour ce faire, insérer un condensateur électrolytique de 10 µF dont la borne positive est orientée vers la pastille (se reporter au schéma de réglage, page 5-1). Mettre à la masse la borne 2 de la liaison Power Link.
- Régler l'oscillateur BF pour qu'il génère une tension de 200 mV eff. env. à 5 kHz.
- Raccorder un voltmètre AF à la pastille de soudure de 30R23 reliée à la borne 53 de 30IC8 (entrée «AF surround»), lire le niveau et le noter.
- Raccorder le voltmètre AF à la cellule 30R10 (sortie «AF surround»). Régler 30C134 pour obtenir à la sortie (30R10) le niveau mesuré à l'entrée (30R23).
- Répéter l'opération ou contrôler que la mesure du gain avoisine ± 3 dB à 3 et 1 kHz.
- Remonter 30R23.

Module 40 «Picture in Picture» Filtre en cloche

- Raccorder une mire SECAM (barres de couleur verticales).
- Régler 40L1 pour obtenir une graduation optimale des couleurs des barres.
- Contrôler en raccordant le cas échéant une mire SECAM (barres de couleur horizontales). A l'aide d'un oscilloscope, vérifier que toutes les barres de couleur présentent le même niveau.

Module 10 «Output Amplifier» Réglage du niveau sonore des HP de grave et d'aigu

Ne régler qu'en cas de remplacement de 10IC1, 10R58 ou 10R59, voire en cas de changement d'une des enceintes. Le module 10 «Output Amplifier» est identique pour les voies droite et gauche.

La valeur calibrée de l'enceinte neuve est estampée sur la face arrière. Pour le réglage, se référer à cette valeur.

- Débrancher la fiche A/V de la prise V.TAPE et la raccorder à un oscillateur BF :

14P21 borne 2	Entrée audio R (droite)
14P21 borne 4	Masse audio
14P21 borne 6	Entrée audio L (gauche)

- Taper V TAPE, appuyer sur LIST jusqu'à ce que l'afficheur indique *SPEAKER*, puis taper 1 (mode son 1 - HP intérieurs du téléviseur).
- Le dispositif de réglage du son du téléviseur («Bass, Treble, Balance») doit être réglé sur 0. La correction physiologique «Loudness» doit être hors circuit («off»). Taper : MENU 5 (ou 4) 2 1 et régler à l'aide des touches ▶▶, ◀◀, ▼ ou ▲
- Raccorder un voltmètre AF à la borne 3 de 10P57.
- Pour régler les aigus appliquer un signal de 10 kHz. Mettre en oeuvre la sortie de l'oscillateur BF et les touches de volume sonore ∧ et ∨ du Beo4 pour régler le niveau de l'entrée 10P57-3 et obtenir 250 mV.
- Pour régler les graves, appliquer un signal de 1 kHz. Mettre en oeuvre la sortie de l'oscillateur BF et les touches de volume sonore ∧ et ∨ du Beo4 pour régler le niveau de l'entrée 10P57-3 et obtenir 250 mV.
- Raccorder le voltmètre AF au niveau de la sortie de l'enceinte correspondante (il n'est pas obligatoire de raccorder les enceintes pour ce réglage).

Graves :	10P60-1	Sortie graves
	10P60-2	Non affecté
	10P60-3	Masse graves
Aigus :	10P60-4	Sortie aigus
	10P60-5	Masse aigus

- Régler la tension de sortie des HP pour qu'elle corresponde à la tension indiquée dans le tableau en regard de la valeur estampée sur la face arrière de l'enceinte.

Réglage des graves : 10R59 (coordonnées 1E)
Réglage des aigus : 10R58 (coordonnées 1D)

Rated value in dB	Bass	Treble
+2,00 dB	1,41 V	2,04 V
+1,75 dB	1,46 V	2,10 V
+1,50 dB	1,50 V	2,16 V
+1,25 dB	1,54 V	2,23 V
+1,00 dB	1,59 V	2,29 V
+0,75 dB	1,63 V	2,36 V
+0,50 dB	1,68 V	2,43 V
+0,25 dB	1,73 V	2,50 V
0,00 dB	1,78 V	2,57 V
- 0,25 dB	1,83 V	2,65 V
- 0,50 dB	1,88 V	2,72 V
- 0,75 dB	1,94 V	2,80 V
- 1,00 dB	2,00 V	2,88 V
- 1,25 dB	2,06 V	2,97 V
- 1,50 dB	2,12 V	3,05 V
- 1,75 dB	2,18 V	3,14 V
- 2,00 dB	2,24 V	3,24 V

Remplacement du module 10 «Output Amplifier»

En remplaçant le module 10 «Output Amplifier», régler les sorties (graves et aigus) sur leurs valeurs nominales (0,00 dB) en suivant la procédure de réglage du niveau sonore des HP de grave et d'aigu. Le module 10 «Output Amplifier» est identique pour les voies droite et gauche.

Module 12 IF

Ne régler qu'en cas de remplacement du module 12 IF ou de 12IC4 TDA9815 (coordonnées 2A).

Fiche d'essai 1P89 :

Borne 1	Masse
Borne 2	5 V
Borne 3	BF gauche (CH SEP)
Borne 4	V_{CAF}
Borne 5	BF droite
Borne 6	Point de commutation V_{CAG}

- Raccorder un signal d'antenne présentant une fréquence connue (XXX.25 MHz) et une modulation stéréo A2.
- Sélectionner «arrêt CAF» (AFC off) dans le menu de configuration de maintenance. Taper : TV MENU 5 (ou 4) 0 0 GO 2 ▶▶ ▼ GO.
- Sélectionner le menu dédié à la sélection des canaux TV : STOP 1 1 ou TV MENU 5 (ou 4) 1 1.
- Régler le sélecteur de canaux sur la fréquence connue en tapant : X X X (chiffres) ▶▶, puis sélectionner un numéro de programme X X GO.

AFC (CAF)

- Raccorder un voltmètre cc à la borne 4 de 1P89 (V_{CAF}).
- Régler 12L5 (coordonnées 2B) avec une clé non magnétique pour obtenir une tension de 1,95 V ± 0,1 V à la borne 1P89-4 (V_{CAF}).

AGC Takeover (point de commutation CAG)

- Régler le signal d'antenne sur 2 mV.
- Raccorder un voltmètre cc à la borne 6 de 1P89 (point de commutation V_{CAG}).
- Régler 12R112 (coordonnées 2B) pour obtenir une tension de 7,3 V ± 0,1 V à la borne 1P89-6 (point de commutation V_{CAG}).

Séparation des voies

- Raccorder un oscilloscope à la borne 3 de 1P89.
- Régler 12R113 (coordonnées 2B) pour obtenir une diaphonie minimale.

CONSEILS DE REPARATION
Mode de maintenance

Le mode de maintenance (Service mode) se subdivise en un menu de maintenance et en un mode ignorant les erreurs sur le bus ("Bus ignore mode").

Menu de maintenance (Service menu)

Le menu de maintenance permet, entre autres, de régler l'image et la géométrie, se reporter au paragraphe "REGLAGES DE MAINTENANCE AVEC LE Beo4". La description suivante met en oeuvre une télécommande Beo4.

- Accès au menu de maintenance : Taper TV MENU, sélectionner l'option "Setup" avec lla touche ▼ et entrer GO 0 0 GO. Dans les menus, il est possible de revenir en arrière en appuyant sur STOP. Pour quitter le mode de maintenance, appuyer sur ●.

```
Service menu

1   Monitor
2   TV tuner
3   V.Tape
```

Le menu de maintenance permet de sélectionner la source à régler, à reconfigurer ou à consulter pour obtenir de plus amples informations.

Sélectionner "Moniteur" (monitor) en tapant 1

```
Monitor service menu

1  Monitor information
2  Service counters
3  Picture adjustments
4  Geometry adjustments
5  Text Registers
```

Le menu de maintenance dédié au moniteur (Monitor service menu) permet de consulter les informations suivantes :
(Le réglage de l'image et de la géométrie est décrit dans le paragraphe consacré au réglage).

Menu "information moniteur", taper 1

```
Monitor information

06 IC1 :       (AP) SW    1.0
14 IC13:       (FEP) SW   1.0
Type                      1811101
Serial no.                12345678
Last TV error             NO
Last ML/SL error          NO
```

- Software version nr. (version du logiciel)
- Type and serie nr. (modèle et n° de série)
- Last TV error (dernière erreur TV)
- Last error ML/SL (dernière erreur ML/SL)

Derrière erreur

Le téléviseur est à même de détecter certains types d'erreur et de les afficher sur le menu de l'écran.

Le premier code d'erreur porte sur la détection des erreurs affectant le téléviseur.
Les erreurs suivantes peuvent être signalées :
"Last TV error" NO = aucune erreur enregistrée
"Last TV error" xx - 1 = erreur sur le bus 1 I²C
"Last TV error" xx - 2 = erreur sur le bus 2 I²C
"Last TV error" DF = absence de donnée (défaut éventuel de la mémoire EEPROM du circuit 6IC4).
"Last TV error" PF = panne secteur (le circuit 2IC7 de TDA9162 ne peut pas initier le mode TV).

Le second code d'erreur porte sur la détection d'erreur dans le système Master Link.
Les erreurs suivantes peuvent être signalées :
"Last ML/SL error" NO = aucune erreur enregistrée
"Last ML/SL error" CI = configuration de l'adresse impossible
"Last ML/SL error" TD = données ML au niveau bas
"Last ML/SL error" TU = données ML au niveau haut
"Last ML/SL error" -- = autres erreurs possibles indéfinissables

Il convient d'effacer le code d'erreur après avoir réparé l'anomalie signalée sur l'afficheur. Pour ce faire, appuyer sur GO dans le menu "information moniteur".

Erreur sur le bus I²C

Ce type d'erreur traduit une absence d'échange de données sur le bus quand le micro-calculateur essaie de dialoguer avec une adresse définie. Dans la majorité des cas, cette erreur signifie que le CI adressé est défectueux. Mais l'anomalie peut également être imputable à un composant périphérique du CI ou à d'autres composants du bus.
Adresses intervenant lors d'une erreur sur le bus I²C :
Dernière erreur sur le bus 1

D0 - 1	14IC40, horloge MK41T56
88 - 1	2IC4, processeur vidéo TDA4680
8A - 1	2IC7, décodeur couleur & processeur synchro TDA9162
4A - 1	41IC2, expanseur E/S I²C PCF8574
2E - 1	40IC5, processeur incrustation d'image dans l'image SDA9188

Dernière erreur sur le bus 2

C0 - 2	1TU1, sélecteur de canaux TV
84 - 2	1IC3, décodeur stéréo A2 TDA8417
B6 - 2	31IC7, décodeur stéréo NICAM CF70088
C6 - 2	20TU1, sélecteur de canaux satellite (SXT2001CDI)
C4 - 2	20TU1, sélecteur de canaux satellite (SXT2041CD)
22 - 2	2IC6, décodeur télétexte SDA5273
80 - 2	14IC10, commandes son TDA7314S
90 - 2	14IC3, commutateur vidéo TEA6425
94 - 2	14IC4, commutateur vidéo TEA6425
96 - 2	14IC2, commutateur vidéo TEA6425
88 - 2	30IC7, processeur son TDA7318
4C - 2	30IC4, expanseur E/S I²C PCF8574
4E - 2	30IC3, expanseur E/S I²C PCF8574

Absence de données (Data failure)

Le micro-calculateur remplace les données manquantes par la valeur par défaut mémorisée dans la PROM (6IC1) si une anomalie affecte l'EEPROM (6IC4) et empêche de lire les données de géométrie et d'image appliquées au téléviseur.

Panne secteur (Power fail)

Le téléviseur se ferme si, après 20 tentatives, 2IC7 (TDA9162) n'arrive pas à démarrer en mode vidéo. Ce phénomène peut se produire en cas d'anomalie dans les circuits de déviation.

Dernière erreur (Last error) ML/SL CI

Défaut dans la configuration de l'adresse. Aucune adresse n'est attribuée car la liaison met en oeuvre un nombre excessif d'unités.
- Isoler l'ensemble des unités raccordées à la liaison et les rebrancher l'une après l'autre. Ne pas oublier que cette mesure concerne également le câble en nappe hexapolaire reliant le téléviseur et le magnétoscope.

Dernière erreur (Last error) ML/SL TD

La liaison présente un niveau bas. Cette erreur peut également traduire un court-circuit physique dans la liaison, dans ses pilotes ou dans le circuit ML maître/source du téléviseur.
- Vérifier que la borne 15 (ML M/S) de 14IC13 délivre des impulsions. La fréquence doit avoisiner 1,5 ms (le téléviseur est maître).
- Isoler l'une après l'autre les unités raccordées à la liaison tout en vérifiant que la liaison autorise un échange de données. Ne pas oublier que cette mesure concerne également le câble en nappe hexapolaire reliant le téléviseur et le magnétoscope.

Dernière erreur (Last error) ML/SL TU

La liaison présente un niveau haut. L'anomalie est imputable au niveau trop bas de la résistance de travail du système ou à une erreur dans les pilotes de la liaison.
- Débrancher la liaison externe du téléviseur. Ne pas oublier de débrancher également le câble en nappe hexapolaire reliant le téléviseur et le magnétoscope. Mettre le téléviseur sous tension et vérifier qu'il émet dans les 3 à 4 secondes qui suivent un télégramme de 15 ms env. au niveau de la borne 13 de 14IC13 (ML TRANSMIT). Il devrait être possible de mesurer un signal identique temporisé de 10 à 15 µs à la borne 14 de 14IC13 (ML RECEIVE).

Sélectionner l'option "registres télétexte" (Text registers) du menu de maintenance dédié au moniteur en tapant 5.

```
Test Register setup

R01  R02  R03  R04  R05  R06  R07  R08
 5    11   0    0    0    0    0    0
R09  R10
 0    0
```

Dans certaines installations câblées, une erreur affectant le temps de propagation de groupe est susceptible d'altérer la réception du télétexte. Il est possible d'éviter ce problème en insérant, en série avec le signal vidéo composite appliqué au décodeur télétexte, un filtre.
Les chiffres figurant sous les registres R01 à R10 correspondent à des numéros de programme. La présence d'un 0 en regard de chaque registre indique qu'aucun des numéros de programme n'a de filtre. Pour insérer un filtre dans un programme, sélectionner un registre en tapant ◀◀ / ▶▶, puis entrer le numéro de programme souhaité. Terminer en appuyant sur GO.
Dans notre exemple, un filtre est inséré dans les programmes 5 et 11. Le filtre n'est opérationnel qu'après avoir commuté une nouvelle fois sur le programme concerné.

Sélectionner l'option "compteurs de maintenance" (Service counters) du menu de maintenance dédié au moniteur en tapant 2.

```
Monitor service counters

Stand-by (days)       0000
Audio mode (days)     0000
Video mode (days)     0000
On/Off (times ★10)    0000
```

La ligne "On/Off (times ★ 10)" indique le nombre de fois que le téléviseur a été commuté en mode veille. Ce nombre est affiché en dizaines d'unités. Seules les 4 unités de plus faible poids sont reprises si le nombre comprend plus de 4 chiffres (exemple : 12834 est affiché sous la forme 2834).
Les autres indications de temps du menu sont exprimées en jours complets.

Sélectionner l'option "sélecteur de canaux TV" (TV-tuner) du menu de maintenance en tapant 2.

```
TV service setup

Tuner system                  AFC
1                             On

Low tuning range              High tuning range
45                            860

Lower band limit              Upper band limit
170                           450

Vhf-1 const     Vhf-2 const     Uhf const
162             148             49
```

Dans le menu de configuration de maintenance TV (TV service setup menu), seules sont mises en oeuvre les options "norme sélecteur de canaux" (Tuner system) et "CAF" (AFC). Les autres indications s'adressent à l'usine. Il est interdit de les modifier.
Norme du sélecteur de canaux :
Le nombre inscrit dans cette zone indique la norme TV couleur retenue dans la définition de la FI correspondante.
Il convient de régler ce nombre si la carte "Tuner & MF" est changée pour capter une autre norme TV couleur.
Les valeurs affectées aux différentes normes sont les suivantes :
B/G = 1
L/L' = 2
M = 4
D/K = 8
I = 16
La valeur applicable à un ensemble de normes s'obtient en additionnant les différents nombres en question.
Les valeurs des variantes FI du BeoVision Avant sont les suivantes :
B/G = 1
B/G/L/L' = 3
I = 16
B/G/L/L'/I = 19
B/G/M/D/K/I = 29
Taper GO pour mémoriser la valeur.

La fonction "marche/arrêt CAF" (AFC On/Off) s'utilise lors du réglage. Mais elle peut également s'avérer utile dans d'autres contextes.
Appuyer sur ◀◀ / ▶▶ pour déplacer le curseur.
Appuyer sur ▲ / ▼ pour commuter entre "marche" (On) et "arrêt" (Off).
Il est impossible de mémoriser l'option "arrêt CAF". Le CAF est toujours en service quand le mode veille est adopté.

Sélectionner l'option "magnétoscope" (V.Tape) du menu de maintenance en tapant 3. Sélectionner l'option "information" dans le menu de maintenance dédié au magnétoscope en tapant 1.
Ce menu d'information permet, entre autres, de connaître les versions du logiciel du magnétoscope.

Le mode de maintenance dédié au magnétoscope est décrit dans la notice de maintenance du magnétoscope BeoVision Avant.

Mode ignorant les erreurs sur le bus (Bus Ignore Mode)

Il est possible de mettre le téléviseur en service et d'ignorer l'erreur éventuelle qui affecte le bus I²C et qui contraint le téléviseur à commuter en mode veille chaque fois qu'une tentative de mise en marche est entreprise.
- Le téléviseur doit être en mode veille.
- Court-circuiter la fiche bipolaire P84 (ignore) coordonnées 7M de la carte "AV switch PCB14".
- Le téléviseur se met alors en marche en ignorant - si possible - l'erreur du bus. Si la mise en marche se révèle impossible, le phénomène est vraisemblablement imputable à une anomalie affectant 6IC3, 14IC13, 26IC3 (en présence d'un positionneur) ou l'un des composants périphériques de ces CI.

Options

La programmation du téléviseur peut retenir trois options.

Option 0 = Coupure du récepteur IR du téléviseur.

Option 1= Installation des systèmes audio et vidéo dans la même pièce.

Option 2 = Installation des systèmes audio et vidéo dans des pièces différentes.

Exemple de programmation à l'aide du Beo4 :
- Le téléviseur doit être en mode veille.
- Taper ●, maintenir la touche enfoncée et appuyer sur LIST. Taper GO, puis LIST jusqu'à ce que l'afficheur du Beo4 indique V.OPT. Entrer alors le numéro de l'option souhaitée.

Le téléviseur est programmé d'usine sur l'option 1.

Cartes "Sound Output PCB10" et "ABL PCB11"

Lors des interventions de maintenance sur les cartes "Sound Output PCB10" et "ABL PCB11", il peut s'avérer opportun de déposer la plaque de refroidissement qui masque une partie des composants. Le CI de sortie STK peut aisément fonctionner quelques instants sans plaque de refroidissement si la modulation est faible.

Alimentation à découpage (SMPS) de la carte PCB4

Les conseils de réparation suivants peuvent s'avérer utiles en cas d'anomalie dans le bloc d'alimentation principale à découpage de la carte PCB4.

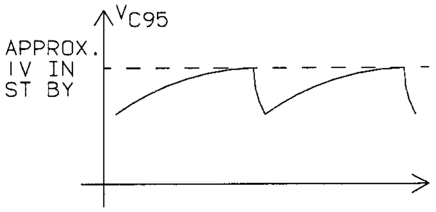
Il est conseillé de remplacer également TR84, TR85 et TR86 si TR41 est défectueux (se contrôle très rapidement avec un ohmmètre).
Si TR41 est en bon état, vérifier les points suivants :

1. La tension traversant C4 doit dépasser 250 V env. Dans la négative, il se peut que le fusible ou D1 soit défectueux.

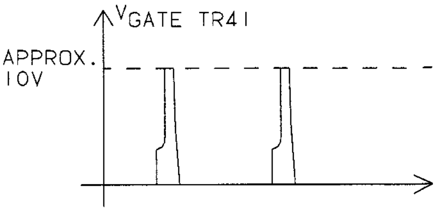
2. La tension d'alimentation appliquée à C83 doit avoisiner 6 V lors de la mise en marche. Le bloc d'alimentation ne démarre pas si elle est inférieure. Ce phénomène peut être imputable à un composant défectueux qui prélève trop de courant sur la ligne d'alimentation.

3. Le bloc d'alimentation ne peut démarrer si TR61 est court-circuité. La tension traversant C83 avoisine 6 V.

4. Le circuit de protection TR91 et d'autres cellules sont actionnés si C95 n'est pas traversé par une tension continue mais par une tension présentant l'allure ci-dessous. Ce phénomène peut s'expliquer par une surcharge du bloc d'alimentation ou par le court-circuit d'un condensateur électrolytique, voire d'une diode montée sur l'une des lignes d'alimentation. La même anomalie apparaît si L91 est découplé.



5. Isoler le drain de TR41 (soulever J5). Raccorder une tension continue externe de 15 à 20 V pour alimenter C83 et relier le téléviseur à la tension secteur. L'oscillateur doit alors fonctionner à 20 kHz. Une tension continue avoisinant 1,3 V doit traverser C95. La tension ne doit pas présenter l'allure de la fig. ci-dessus.
   La tension au collecteur de TR83 doit être rectangulaire. Cette allure est amplifiée dans TR84, puis appliquée à la gâchette de TR41.

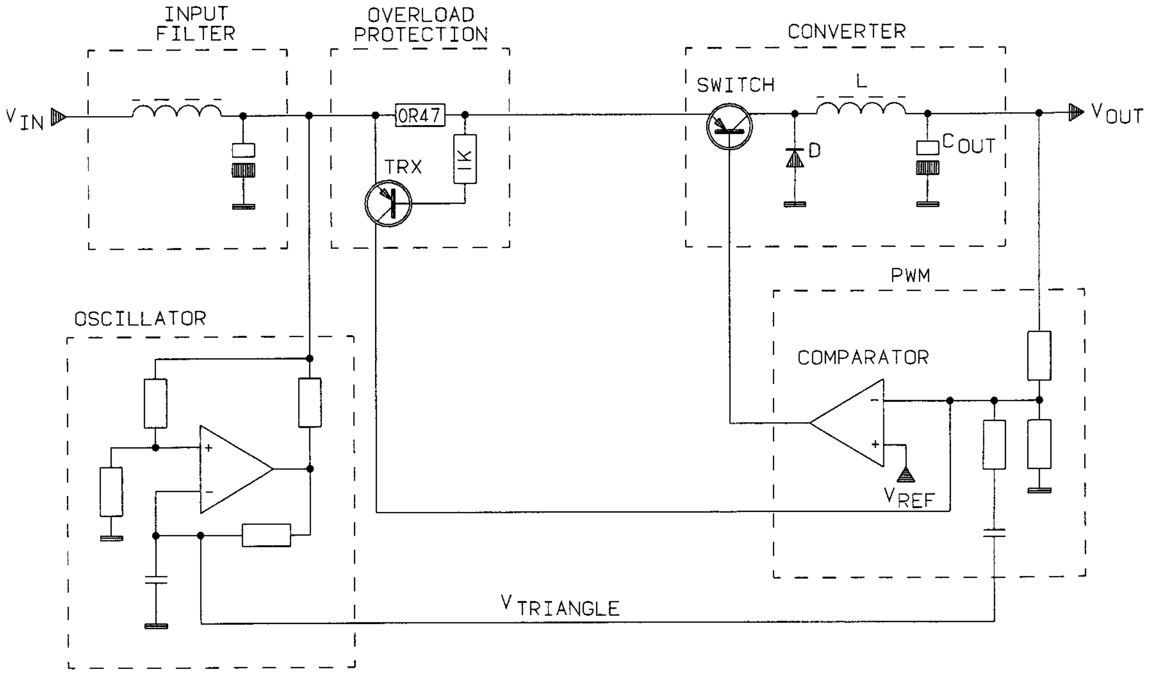


6. Vérifier que la borne 2 de P42 commute au niveau haut si le téléviseur en veille ne peut pas se mettre en marche en mode audio.

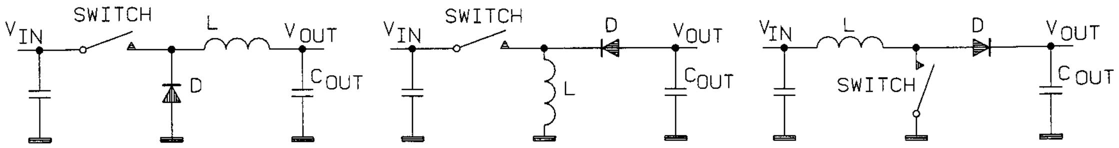
Alimentation à découpage 50 kHz

Le BeoVision Avant présente trois petits blocs d'alimentation à découpage. Ils sont logés sur les cartes "AV Switch PCB14", "Satellit PCB20" et "Dolby Surround PCB30".
Ces trois alimentations à découpage reposent sur des principes différents mais présentent toutes les composants suivants :

- Oscillateur
- Circuit de réaction/modulateur de largeur d'impulsion (PWM)
- Filtre d'entrée
- Circuit de protection
- Convertisseur (contacteur)


INPUT FILTER
OVERLOAD PROTECTION
CONVERTER
V_{IN}
0R47
TRX
1K
SWITCH
L
D
C_{OUT}
V_{OUT}
PWM
OSCILLATOR
COMPARATOR
V_{REF}
$V_{TRIANGLE}$

Ces trois principes sont schématisés ci-dessous :


V_{IN}
SWITCH
L
D
V_{OUT}
C_{OUT}

BUCK CONVERTER/
STEP DOWN

FLYBACK CONVERTER

BOOST CONVERTER/
STEP UP

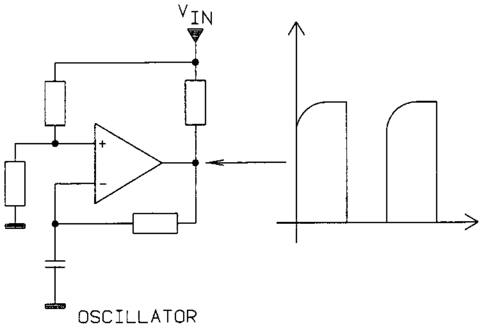
Origines vraisemblables des anomalies affectant le convertisseur

- Contacteur défectueux → absence de Vout ou Vout = Vin.
- Diode défectueuse → absence de Vout ou Vout = Vin.

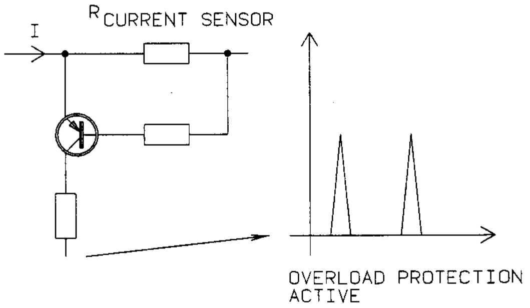
Conseils généraux pour rechercher les pannes

1. Contrôler la tension au niveau du collecteur du transistor de commutation. Elle doit être rectangulaire avec éventuellement quelques rebondissements. Les impulsions présentent une fréquence de 50 kHz env. L'alimentation à découpage ne fonctionne pas s'il s'agit d'une tension continue. Une anomalie peut affecter l'oscillateur, le transistor de commutation ou la diode du convertisseur.

2. Vérifier que l'oscillateur fonctionne à une fréquence de 50 kHz env. Dans la négative, l'oscillateur peut présenter une anomalie ou le circuit de protection être en service. L'oscillateur de toutes les petites alimentations à découpage adopte la même configuration et met en oeuvre un comparateur.



3. Voir si le circuit de protection est en service. Dans l'affirmative, le phénomène peut s'expliquer par une surcharge ou par un composant défectueux dans l'alimentation à découpage. Couper la charge pour localiser l'erreur. Le circuit de protection délivre une impulsion quand le courant traversant le transistor de commutation est trop important. Dans ce cas, le transistor bloque et ne réadopte l'état passant qu'au bout de 20 µs env.



DISMANTLING

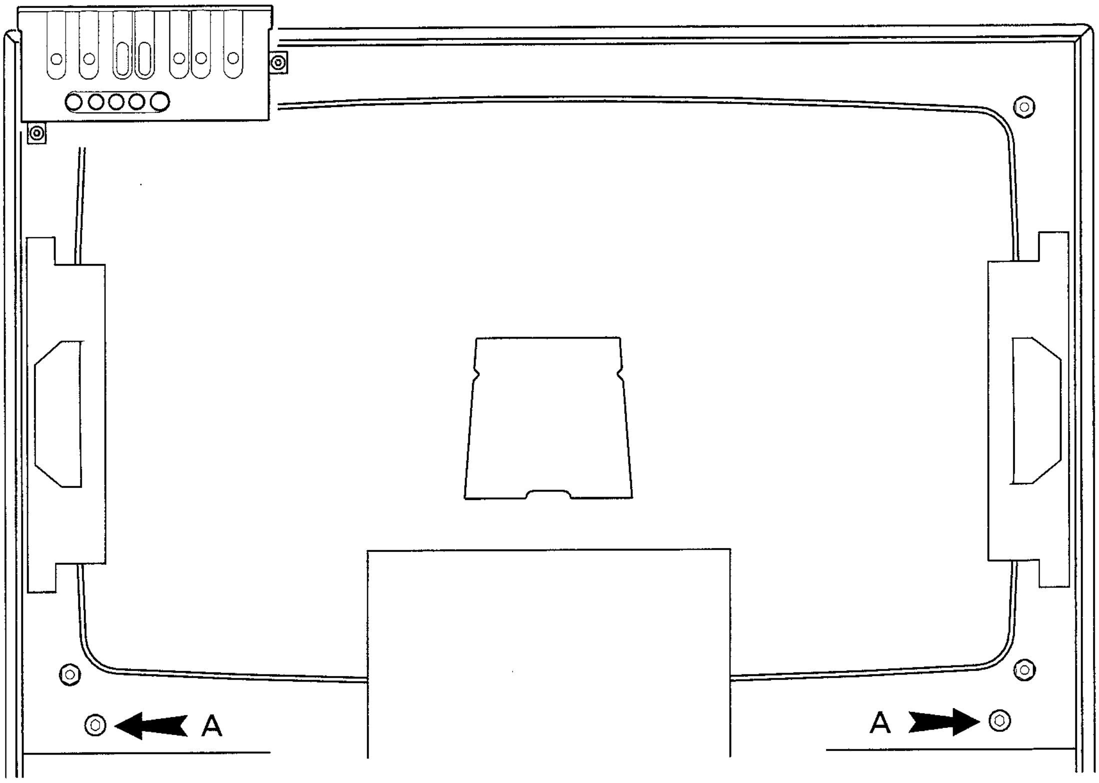
Contrast screen and front frame
Remove the upper rear panel (6 screws).

ZERLEGUNG

Kontrastscheibe & Frontrahmen
Das obere Rückwandteil (6 Schrauben) abmontieren.

DESASSEMBLAGE

Ecran de contraste et panneau frontal
Déposer la partie supérieure de la face arrière (6 vis).



Unscrew the screws A, and pull them backwards and out. A 4 mm box spanner is required. Remove the front frame. Lift up the front frame and pull it off.
Remove four screw, thereby removing the contrast screen.
When the front frame is installed, it must be "clicked" into place to be installed correctly.

Die Schrauben A lösen und nach hinten ziehen. Zum Lösen der Schrauben ist ein 4 mm Steckschlüssel zu benutzen. Der Frontrahmen muß abmontiert werden. Den Frontrahmen anheben und abziehen. 4 Schrauben und damit auch die Kontrastscheibe abmontieren. Bei der Montage des Frontrahmens muß dieser einschnappen, um korrekt zu sitzen (auf Klickgeräusch achten).

Desserrer les vis A et tirer en arrière. Utiliser une clé à douille de 4 mm. Il convient de déposer le panneau frontal. Pour ce faire, soulever et tirer. Dévisser 4 vis pour pouvoir déposer l'écran de contraste. L'écran de contraste est bien remonté quand il s'enclenche en émettant un clic audible.

Speaker front fabric
Pull the fabric frame outwards on the right-hand side, and push it towards the right.

Installation:
Fit the fabric frame guide pins into the pilot holes.
Press the fabric frame against the product at the centre, and push the fabric frame towards the left.

Lautsprecherfrontstoff
Den Stoffrahmen auf der rechten Seite nach außen ziehen und anschließend nach rechts verschieben.

Montage:
Die Führungszapfen des Stoffrahmens in die Führungslöcher einsetzen. Den Stoffrahmen in der Mitte gegen das Gerät drücken und den Stoffrahmen nach links verschieben.

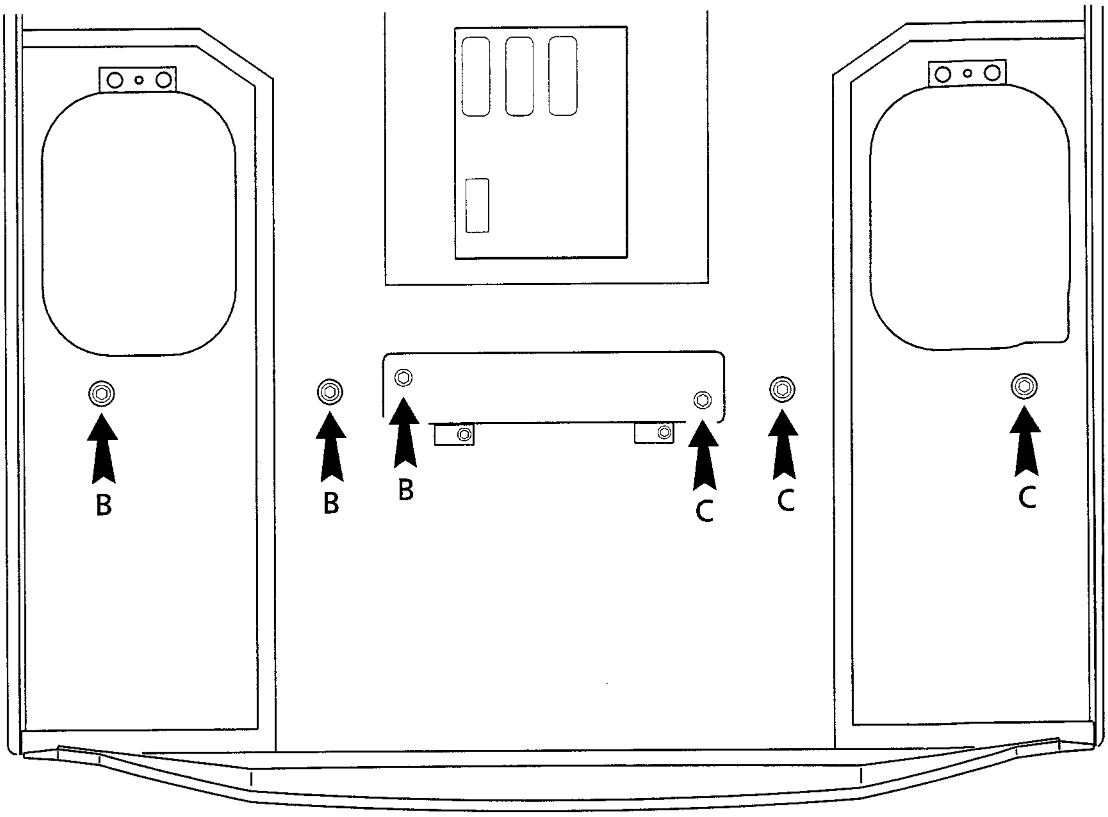
Panneau frontal en textile du haut-parleur
Tirer sur le côté droit du panneau en textile et le repousser vers la droite.

Montage :
Engager les tenons du panneau en textile dans les orifices de guidage. Appuyer le panneau en textile (au milieu) contre l'appareil et repousser le panneau vers la gauche.

Left- and right-hand front mouldings
The VTR unit and the speaker cabinets have to be removed. See the applicable instructions below.

Linke und rechte Frontzierleiste
Die VTR-Einheit und die Lautsprechergehäuse müssen abmontiert werden. Siehe hierzu die entsprechenden Punkte.

Bandeaux décoratifs droit et gauche de la face avant
Il convient de déposer le magnétoscope et les enceintes des haut-parleurs. Se reporter aux points traitant de ces opérations.



Unscrew the screws B to remove the right-hand moulding and the screws C to remove the left-hand moulding.

Zum Abnehmen der rechten Zierleiste sind die Schrauben B und zum Abnehmen der linken Zierleiste die Schrauben C herauszuschrauben.

Enlever les vis B pour déposer le bandeau décoratif droit, les vis C pour le bandeau gauche.

Cassette flap

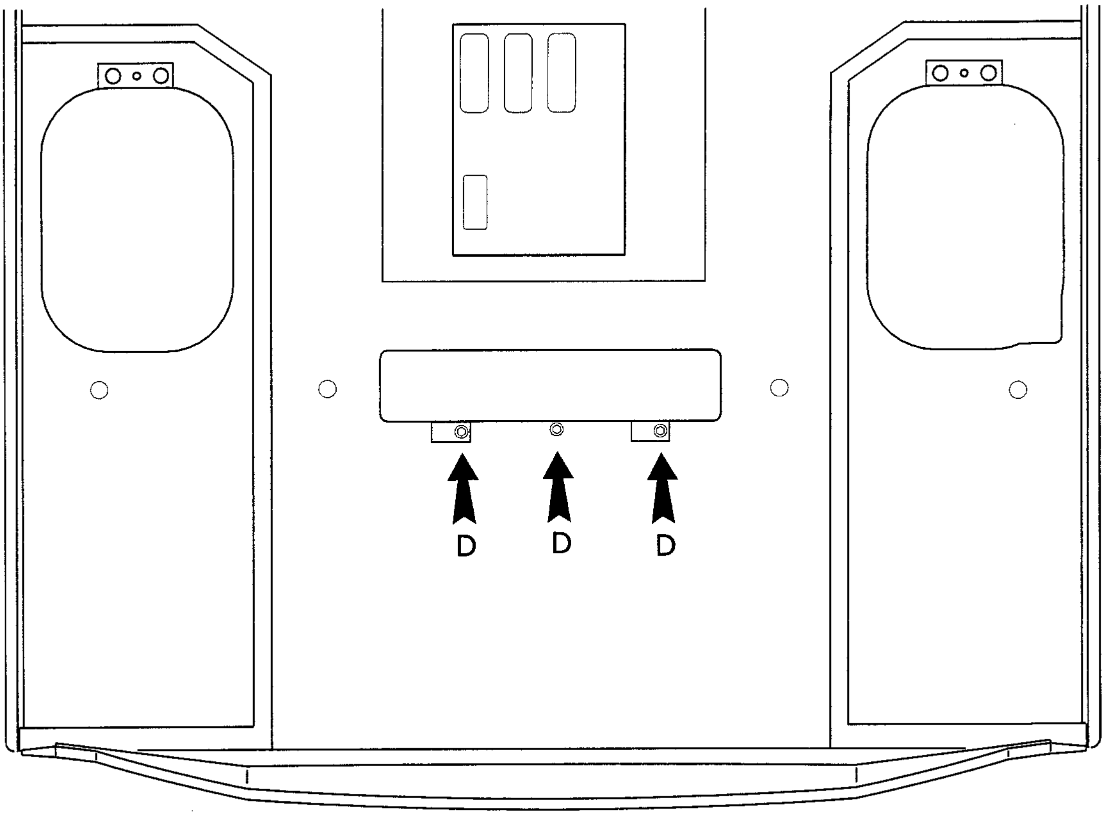
The left- and right-hand mouldings have to be removed. See the applicable instructions above.

Cassettenschachtklappe

Die linke und rechte Frontzierleiste müssen abmontiert werden. Siehe hierzu den entsprechenden Punkt.

Volet du compartiment de la cassette

Il convient de déposer les bandeaux décoratifs droit et gauche de la face avant. Se reporter au point traitant de cette opération.



Unscrew the screws D to remove the cassette flap.

Zum Abmontieren der Cassettenschachtklappe sind die Schrauben D herauszuschrauben.

Dévisser les vis D pour déposer le volet du compartiment de la cassette.

VTR unit
(Gives access to e.g. the motorized stand electronics which are located in a housing on top of the motorized stand.)
Remove the lower rear panel (4 screws).
Remove the 4 screws (2 on each side) which hold the metal box containing the VTR unit.
The metal box containing the VTR unit can now be pulled backwards and out when the leads have been disconnected.
The mains lead and the 2-pole lead have to be disconnected from PCB60 which is located in the black plastic box containing the mains switch.

Installation:
Push home the metal box containing the VTR unit in the main frame, and then pull it approx. 3 mm backwards.
Tilt up the cassette flap, and carefully push the metal box containing the VTR unit into place, i.e. so that the pin on the left-hand side of the cassette lift goes into mesh with the cassette flap.

Speaker cabinets
Remove the upper rear panel (6 screws).
Remove the lower rear panel (4 screws).
Remove the speaker front fabric. See the applicable instructions above.
Remove the screw at the top of the speaker cabinet, as viewed from the front.
The speaker cabinet can now be pulled backwards.
When installing the speaker cabinet, the two rubber dampers must be fitted on the towers at the bottom of the speaker cabinet, and they must be fitted into the holes in the bottom of the main frame.

VTR-Einheit
(Bietet u.a. Zugang zur Drehfußelektronik, die in einem Gehäuse oben auf dem Drehfuß angeordnet ist). Das untere Rückwandteil (4 Schrauben) abmontieren. Die 4 Schrauben (2 auf jeder Seite), die den Metallkasten mit der VTR-Einheit festhalten, abmontieren. Der Metallkasten mit der VTR-Einheit kann jetzt nach Demontage der zugehörigen Leistungen nach hinten herausgezogen werden.
Die Netzleitung und die 2polige Leitung sind auf der Platine PCB60, die sich in der schwarzen Kunststoffbox mit dem Netzschalter befindet, abzumontieren.

Montage:
Den Metallkasten mit der VTR-Einheit in den Hauptrahmen ganz hineinschieben und ihn danach um ca. 3 mm nach hinten ziehen. Die Cassettenschachtklappe nach oben kippen und den Metallkasten mit der VTR-Einheit vorsichtig nach vorne schieben, so daß der Zapfen auf der linken Seite des Cassettenlifts mit der Cassettenschachtklappe einrastet.

Lautsprechergehäuse
Das obere Rückwandteil (6 Schrauben) abmontieren.
Das untere Rückwandteil (4 Schrauben) abmontieren.
Den Lautsprecherfrontstoff abmontieren. Siehe hierzu den entsprechenden Punkt.
Die Schraube ganz oben am Lautsprechergehäuse (von vorne gesehen) abmontieren.
Das Lautsprechergehäuse kann jetzt nach hinten gezogen werden.
Bei der Montage des Lautsprechergehäuses müssen die 2 Gummipuffer auf die Türme am Boden des Lautsprechergehäuses gesetzt sein, und diese sind in die Löcher im Boden des Hauptrahmens zu setzen.

Magnétoscope
(Permet, entre autres, d'accéder à l'électronique du pied rotatif qui est logée dans un boîtier surmontant le pied proprement dit).
Déposer la partie inférieure de la face arrière (4 vis).
Enlever les 4 vis (2 de chaque côté) maintenant le coffret métallique et le magnétoscope. Il est alors possible de déposer le coffret métallique et le magnétoscope en tirant sur l'ensemble après avoir déconnecté les câbles correspondants.
Débrancher le cordon d'alimentation et le câble à deux conducteurs de la carte PCB60 logée dans le coffret plastique noir présentant l'interrupteur secteur.

Montage :
Repousser le coffret métallique et le magnétoscope au fond du cadre principal, puis tirer légèrement (3 mm env.) l'ensemble vers soi.
Soulever le volet du compartiment de la cassette, puis positionner avec précaution le coffret métallique et le magnétoscope en les repoussant pour que le tenon gauche du dispositif de levage de la cassette soit en prise avec le volet.

Enceintes des haut-parleurs
Déposer la partie supérieure de la face arrière (6 vis).
Déposer la partie inférieure de la face arrière (4 vis).
Enlever le panneau frontal en textile du haut-parleur. Se reporter au point traitant de cette opération.
Enlever la vis située en haut de l'enceinte vue de devant.
Il est alors possible de déposer l'enceinte en la tirant.
Lors du remontage de l'enceinte, poser les 2 amortisseurs en caoutchouc sur les protubérances que présente la partie inférieure de l'enceinte et veiller à ce qu'ils se logent dans les orifices pratiqués dans le fond du cadre principal.

Service position of power chassis

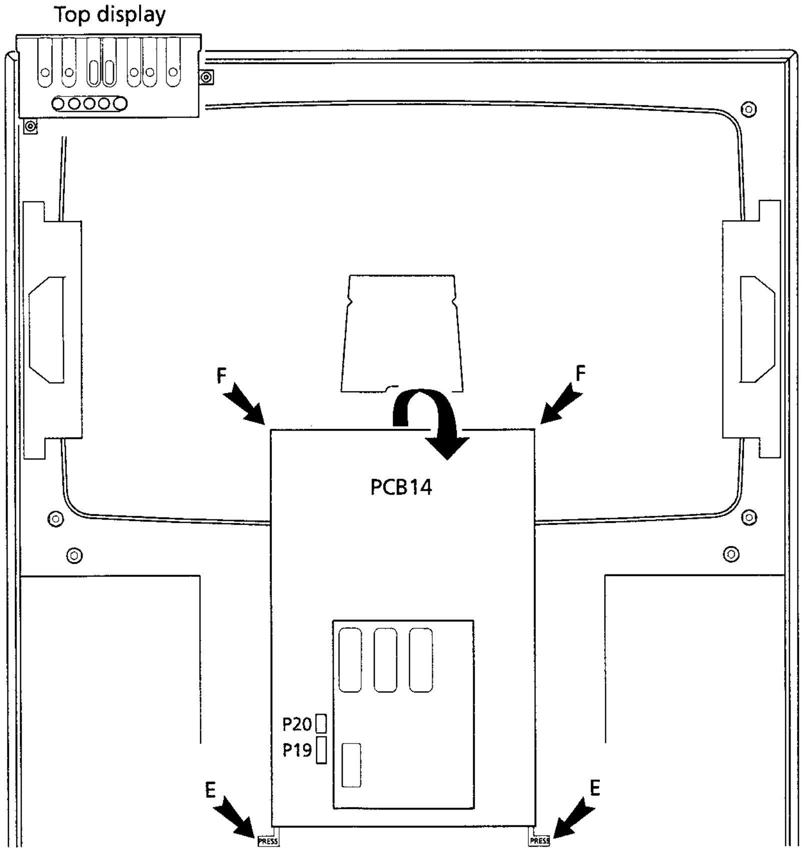
Remove the upper rear panel (6 screws).
Unscrew the top display (2 screws). To be able to operate the product with the chassis in service position, the top display must be connected to the chassis.
Unplug the aerial plug from the tuner.
Unplug the plugs at P19 and P20 on PCB14. (P19 is connected to the VTR unit and P20 to the motorized stand.)
Take the lead connections to the chassis out of their cable holders. NOTE: when the product is assembled the leads must be reinstalled correctly in their cable holders.

Service-Position des elektrischen Chassis

Das obere Rückwandteil (6 Schrauben) abmontieren.
Das Top-Display (2 Schrauben) abschrauben. Um das Gerät mit dem elektrischen Chassis in Service-Position bedienen zu können, muß das Top-Display unbedingt Verbindung zum Chassis haben.
Den Antennenstecker aus dem Tuner herausnehmen.
Die Steckverbindungen in P19 und P20 auf der Platine PCB14 abmontieren. (P19 hat Verbindung zur VTR-Einheit und P20 zum Drehfuß).
Die Leitungsverbindungen für das Chassis aus ihren Leitungshaltern lösen. Achtung! Wenn das Gerät zusammengebaut wird, sind die Leitungen wieder in die Leitungshalter korrekt anzubringen.

Position de maintenance du châssis électrique

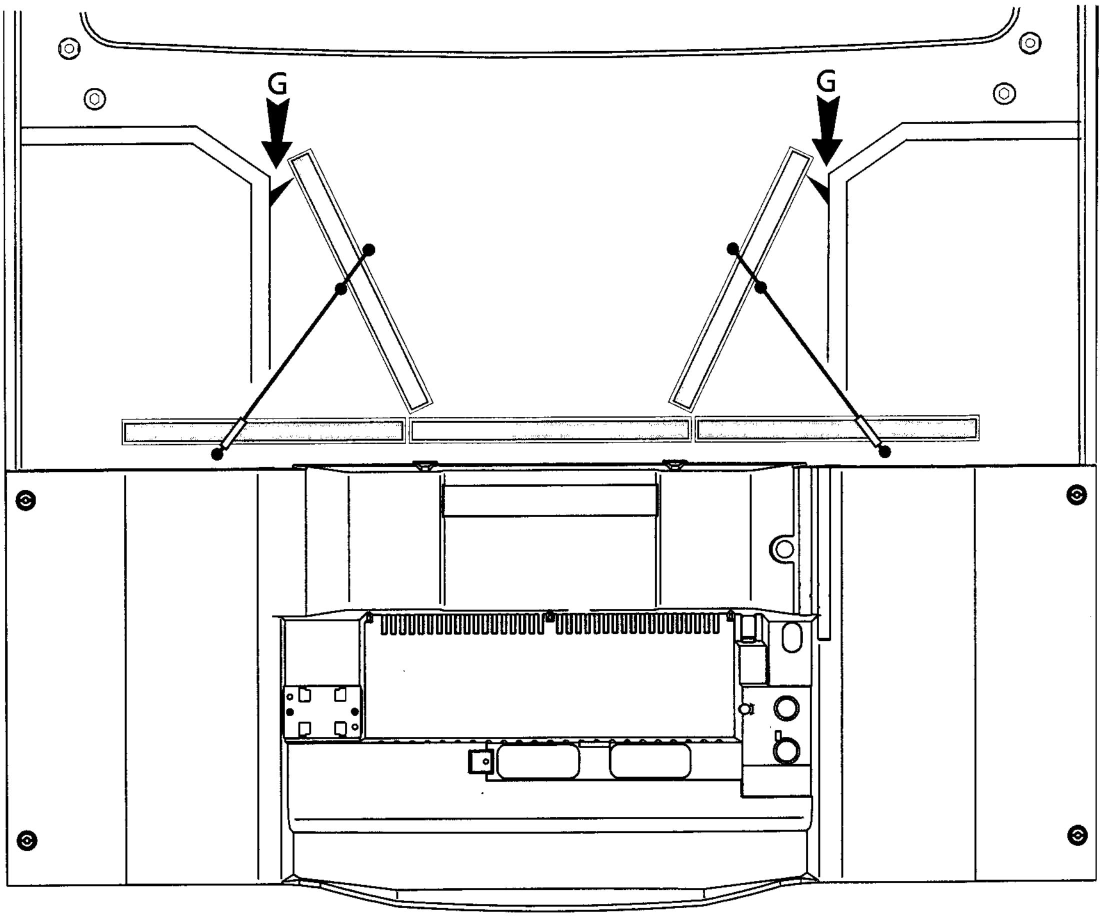
Déposer la partie supérieure de la face arrière (6 vis).
Dévisser l'afficheur supérieur (2 vis). Il est impératif que l'afficheur supérieur soit relié au châssis pour pouvoir commander l'appareil quand le châssis est en position de maintenance.
Débrancher la fiche d'antenne du sélecteur de canaux.
Débrancher les fiches raccordées à P19 et P20 sur la carte PCB14 (P19 est reliée au magnétoscope et P20 au pied rotatif).
Sortir des serre-câbles les fils raccordés au châssis. Attention ! Lors du rassemblage, il convient de remettre correctement les fils dans les serre-câbles.



Press down the locking pins E, and pull out the chassis to the first stop. Grab the chassis frame at the points F at the top, and pull the chassis backwards.
The two PCB frames on either side of the chassis can now be tilted out and away from each other.

Die Verriegelungslaschen E nach unten drücken und das Chassis bis zum ersten Anschlag herausziehen. Den Chassisrahmen oben an den Punkten F anfassen und das Chassis nach hinten ziehen.
Die 2 Platinenrahmen auf beiden Seiten des Chassis können jetzt heraus- und auseinandergekippt werden.

Appuyer sur les ergots de verrouillage E et sortir le châssis en le tirant jusqu'au premier cran. Prendre le haut du cadre du châssis par les points F et tirer le châssis en arrière.
Il est alors possible de pivoter et de désolidariser les deux cadres accueillant les cartes de chaque côté du châssis.



Hang the innermost PCB frame on either side on the hooks G in the aluminium brackets.
When assembling the product, make sure to fasten all leads in the cable holders. This will prevent the occurrence of clinking and clanking sounds at high volumes.
The EHT and focus cables must be run below the picture tube throat and tied to the cable holders on the degaussing coil. Make sure that they do not come close to the right output amplifier since that could damage the output IC.

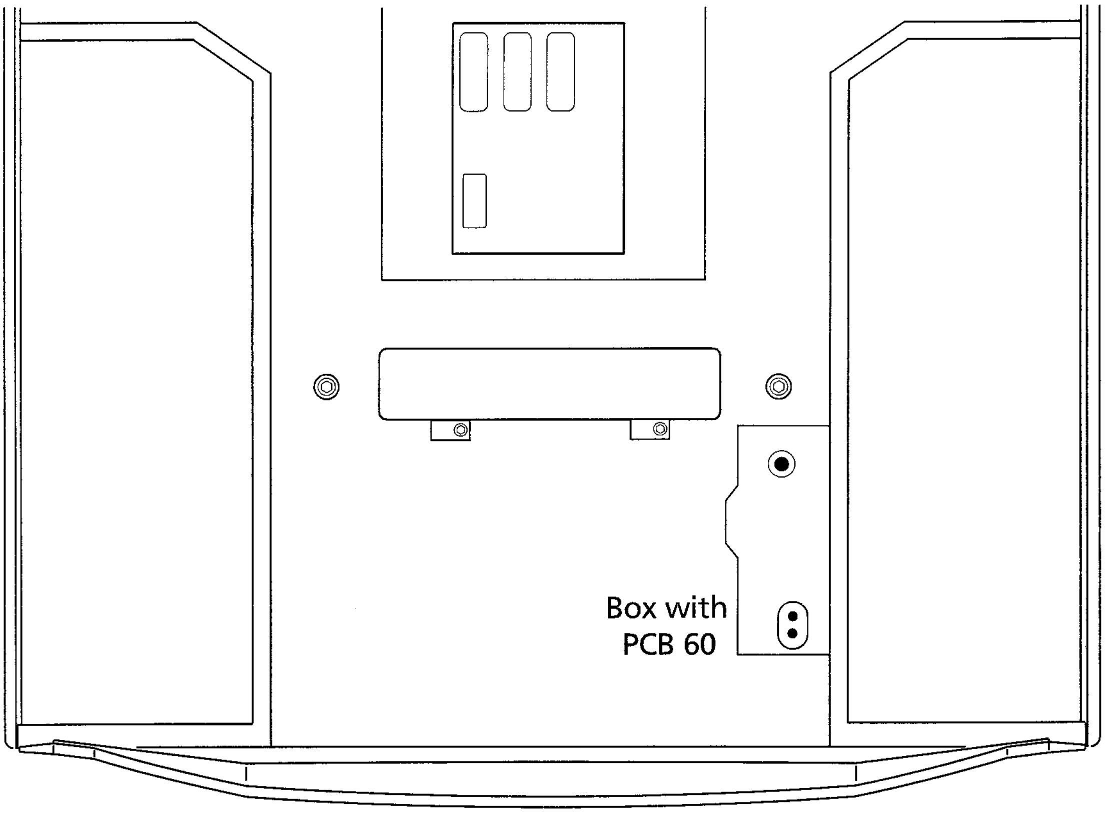
Der innere Platinenrahmen - auf jeder Seite des Chassis - wird auf die Haken G der Aluminiumwinkel gehängt.
Beim Zusammenbau des Gerätes ist es wichtig, daß alle Leitungen in den Leitungshaltern angebracht werden. Dadurch werden Klirr- und Klappergeräusche bei hoher Lautstärke vermieden.
Die EHT- und Fokussierkabel sind unter dem Bildröhrenhals zu verlegen und an den Leitungshaltern an der Entmagnetisierungsspule (Degauß-Spule) zu befestigen. Die dürfen nicht zu nahe am rechten Ausgangsverstärker liegen, da der Ausgangs-IC dadurch beschädigt werden kann.

De chaque côté du châssis, accrocher dans les cornières en aluminium G le cadre intérieur accueillant une carte.
En rassemblant l'appareil, veiller à regrouper tous les fils dans les serre-câbles. Cette mesure vise à éviter tout cliquetis ou bruit quand l'intensité sonore est élevée.
Amener les fils de concentration et de THT sous le col du tube cathodique et les coincer dans les serre-câbles de la bobine de démagnétisation. Ces fils ne doivent pas se trouver à proximité de l'amplificateur de sortie droit sous peine d'endommager le CI de sortie.

Mains Distribution, PCB60 (with mains fuse)
Remove the VTR unit. See the applicable instructions above.

'Mains Distribution'-PCB60 (mit Netzsicherung)
Die VTR-Einheit ausbauen. Siehe hierzu den entsprechenden Punkt.

Carte PCB60 "Mains Distribution" (dotée d'un coupe-circuit secteur)
Déposer le magnétoscope. Se reporter au point traitant de cette opération.



The cover of the black plastic box holding PCB60 can now be unclipped.

Der Deckel der schwarzen Kunststoffbox, wo die Platine PCB60 angeordnet ist, kann jetzt abgenommen werden.

Il est alors possible de sortir de ses clips le couvercle obturant le petit boîtier noir.

Motorized stand
Carefully place the BeoVision Avant on its side.
Remove the 4 pieces of tape covering the holes in the bottom of the motorized stand.
Turn the motorized stand until the 4 holes in the bottom are aligned with the screws.
Unscrew the 4 screws to remove the motorized stand.
The aluminium sheet on the motorized stand is fixed with double-sided adhesive tape.

Drehfuß
BeoVision Avant vorsichtig auf die Seite legen.
Die 4 Klebebandabdeckungen der Löcher im Boden des Drehfußes entfernen.
Dann so lange am Drehfuß drehen, bis die Schrauben durch die 4 Löcher im Boden des Drehfußes zugänglich sind.
Zur Demontage des Drehfußes die 4 Schrauben herausschrauben.
Das Aluminiumblech auf dem Drehfuß ist mit Doppelklebeband befestigt.

Pied rotatif
Poser délicatement le BeoVision Avant sur le côté.
Enlever les 4 bandes masquant les orifices pratiqués dans la plaque de fond du pied rotatif.
Tourner le pied rotatif jusqu'à ce que les 4 orifices de la plaque de fond soient en regard des vis.
Dévisser les 4 vis pour déposer le pied rotatif.
Un ruban adhésif double face maintient la plaque d'aluminium sur le pied rotatif.

INSULATION TEST

Each set must be insulation tested after having been dismantled. Make the test when the set has been reassembled and is ready to be returned to the customer.

Flashovers must not occur during the testing procedure!

Make the insulation test as follows: Short-circuit the two pins of the mains plug and connect them to one of the terminals of the insulation tester. Connect the other terminal to ground on the aerial socket.

NOTE!
To avoid damaging the set it is essential that both terminals of the insulation tester have good contact.

Slowly turn the voltage control of the insulation tester until a voltage of 1.5 kV is obtained. Maintain that voltage for one second, then slowly turn it down again.

ISOLATIONSPRÜFUNG

Nach einer Zerlegung ist bei jedem Gerät eine Isolationsprüfung vorzunehmen. Die Prüfung wird dann ausgeführt, wenn das Gerät wieder vollständig zusammengebaut und zur Auslieferung an den Kunden bereit ist.

Überschläge dürfen während der Prüfung nicht vorkommen!

Die Isolationsprüfung in folgender Weise durchführen:
Die beiden Steckerstifte am Netzstecker kurzschließen und an eine der Anschlußklemmen des Isolationsprüfers anschließen. Die andere Anschlußklemme an die Masse des Antennenanschlußes anschließen.

ACHTUNG!
Um Beschädigungen des Gerätes zu vermeiden, ist es wichtig, daß beide Anschlußklemmen des Isolationsprüfers einen sehr guten Kontakt haben.

Die Spannungsregelung des Isolationsprüfers langsam nach oben drehen, bis eine Spannung von 1,5 kV erreicht wird. Diese Ein-stellung 1 Sekund aufrechterhalten, und anschließend die Spannung wieder langsam nach unten drehen.

TEST D'ISOLEMENT

Il convient de soumettre l'appareil à un test d'isolement après l'avoir désassemblé. Ce test est effectué après avoir réassemblé l'appareil et avant de la remettre au client.

Aucun amorçage doit se produire lors du test!

Procéder au test d'isolement comme suit:
Court-circuiter les deux broches de la fiche secteur et les raccorder à une des bornes du testeur d'isolement. Raccorder l'autre borne à la broche d'une des prises d'antenne.

ATTENTION!
Pour éviter d'endommager l'appareil, il est important que les deux bornes du testeur d'isolement possèdent un bon contact.

Tourner lentement la tension sur le testeur d'isolement jusqu'à arriver à 1,5 kV. Maintenir cette tension pour 1 seconde, puis la diminuer lentement de nouveau.

Bang&Olufsen

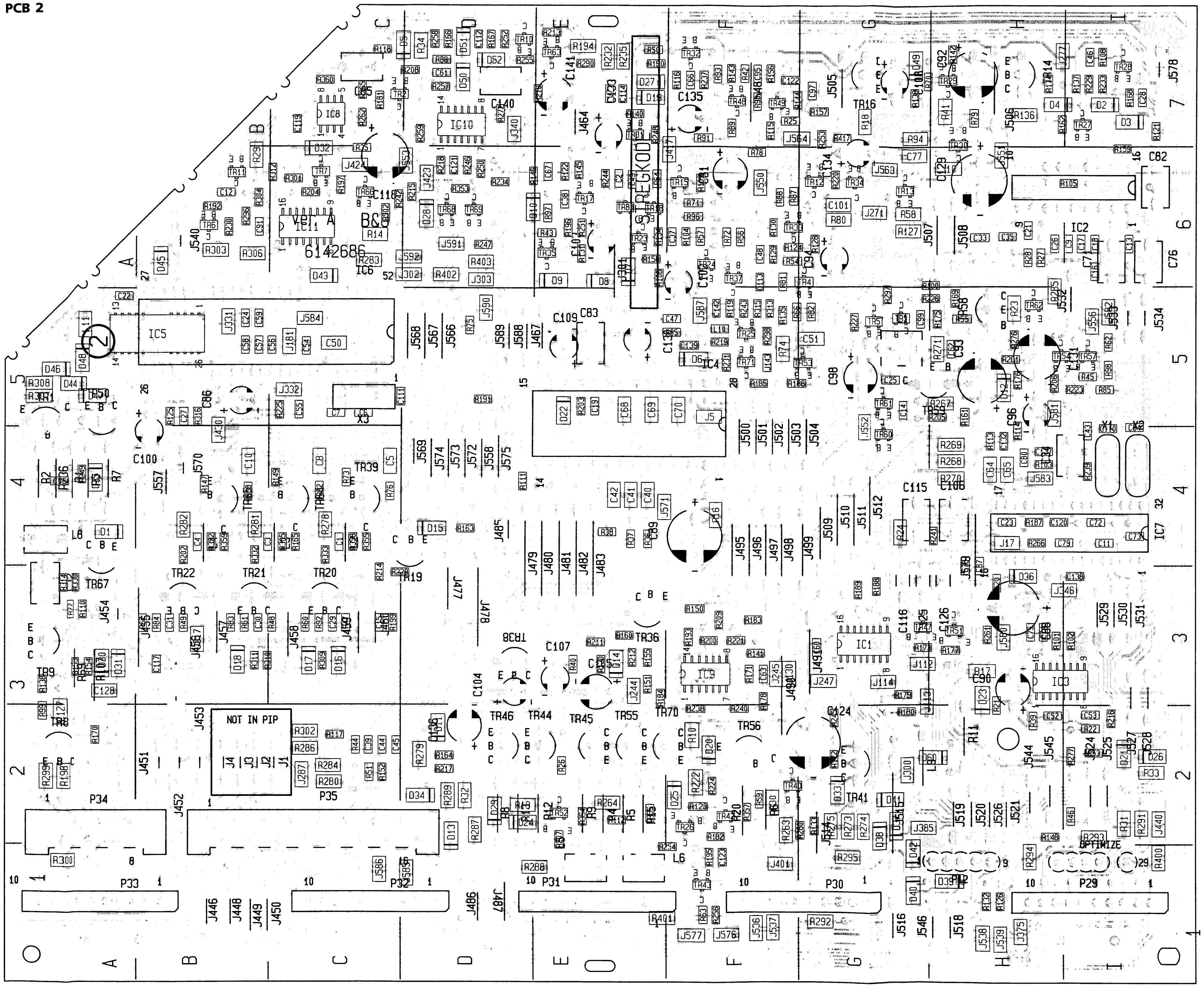
BeoVision Avant
Super-Flat Picture Tube

02-96 3538861 Paste into service manual BeoVision Avant – 3538842

BeoVision Avant
Super-Flat Picture Tube

SERVICE MANUAL

PCB 2


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
TR9
TR16
TR19
TR20
TR21
TR22
TR36
TR38
TR39
TR41
TR44
TR45
TR46
TR55
TR56
TR67
TR70
NOT IN PIP
OPTIMIZE
P29
P30
P31
P32
P33
P34
P35
X3
Y1
B&O
6142686
C82
C76
C100
C107
C109
C115
C116
C124
C135
C140
C141
L6
L8

Oscilloscope pictures for diagram B

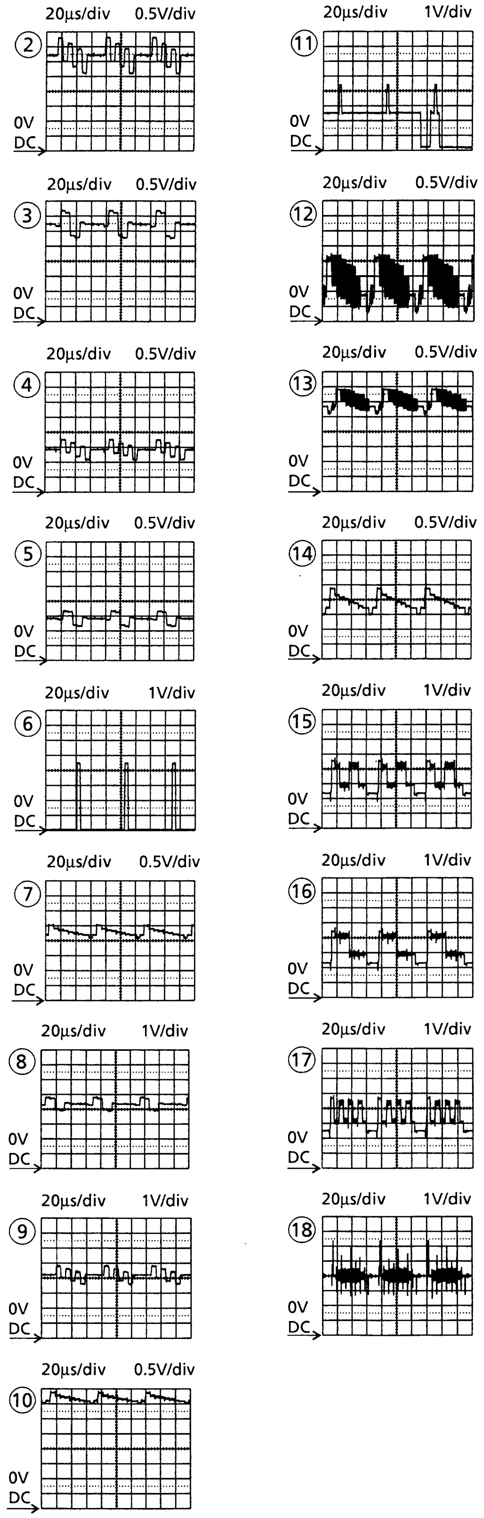


DIAGRAM B PAL/SECAM/NTSC COLOUR DECODER (NEW VERSION, FAST TEXT)

On the PCB's first produced the coordinate system has been turned 180 degrees in relation to the old PCB. The co-ordinate nos. on the diagrams refer to the PCB drawing on page 11-2.

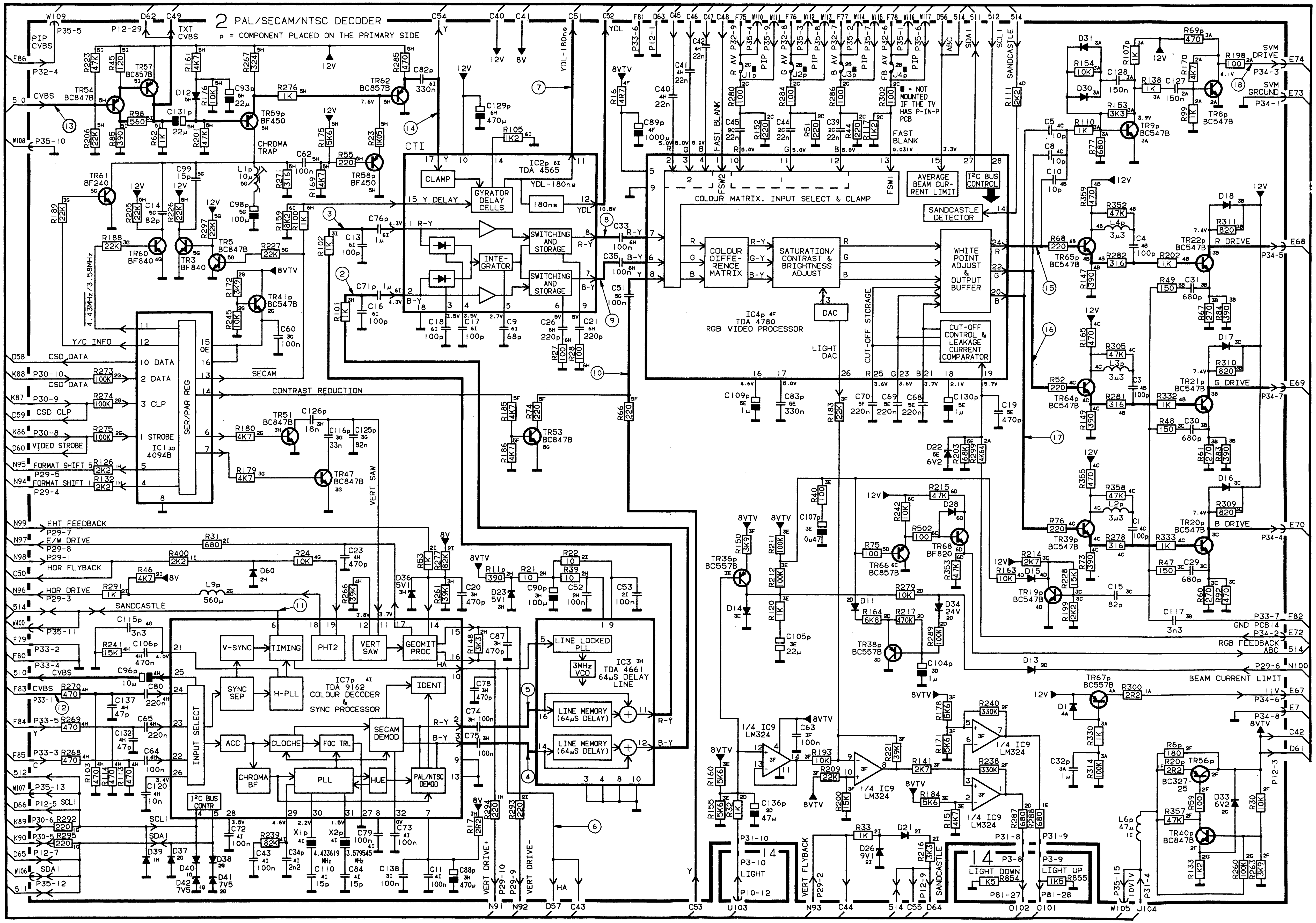

2 PAL/SECAM/NTSC DECODER
p = COMPONENT PLACED ON THE PRIMARY SIDE
CHROMA TRAP
CTI
IC2p TDA 4565
CLAMP
GYRATOR DELAY CELLS
15 Y DELAY
INTE-GRATOR
SWITCHING AND STORAGE
YDL-180ns
IC4p TDA 4780 RGB VIDEO PROCESSOR
COLOUR MATRIX, INPUT SELECT & CLAMP
COLOUR DIFFERENCE MATRIX
SATURATION/ CONTRAST & BRIGHTNESS ADJUST
WHITE POINT ADJUST & OUTPUT BUFFER
AVERAGE BEAM CURRENT LIMIT
I²C BUS CONTROL
SANDCASTLE DETECTOR
CUT-OFF CONTROL & LEAKAGE CURRENT COMPARATOR
DAC
LIGHT DAC
CUT-OFF STORAGE
FAST BLANK
■ = NOT MOUNTED IF THE TV HAS P-IN-P PCB
IC1 4094B
SER/PAR REG
CSD DATA
CSD CLP
VIDEO STROBE
FORMAT SHIFT 5
FORMAT SHIFT 1
Y/C INFO
SECAM
CONTRAST REDUCTION
VERT SAW
EHT FEEDBACK
E/W DRIVE
HOR FLYBACK
HOR DRIVE
SANDCASTLE
IC7p TDA 9162 COLOUR DECODER & SYNC PROCESSOR
V-SYNC
TIMING
PHT2
VERT SAW
GEOMIT PROC
SYNC SEP
H-PLL
IDENT
INPUT SELECT
ACC
CLOCHE
FOC TRL
SECAM DEMOD
CHROMA BF
PLL
HUE
PAL/NTSC DEMOD
I²C BUS CONTR
IC3 TDA 4661 64µS DELAY LINE
LINE LOCKED PLL
3MHz VCO
LINE MEMORY (64µS DELAY)
1/4 IC9 LM324
R DRIVE
G DRIVE
B DRIVE
SVM DRIVE
SVM GROUND
GND PCB14
RGB FEEDBACK
BEAM CURRENT LIMIT
LIGHT DOWN
LIGHT UP
VERT DRIVE+
VERT DRIVE-
VERT FLYBACK
4.43MHz/3.58MHz

DIAGRAM C TELETEXT & LUMINANCE PEAKING (NEW VERSION, FAST TEXT)

On the PCB's first produced the coordinate system has been turned 180 degrees in relation to the old PCB. The co-ordinate nos. on the diagrams refer to the PCB drawing on page 11-2.

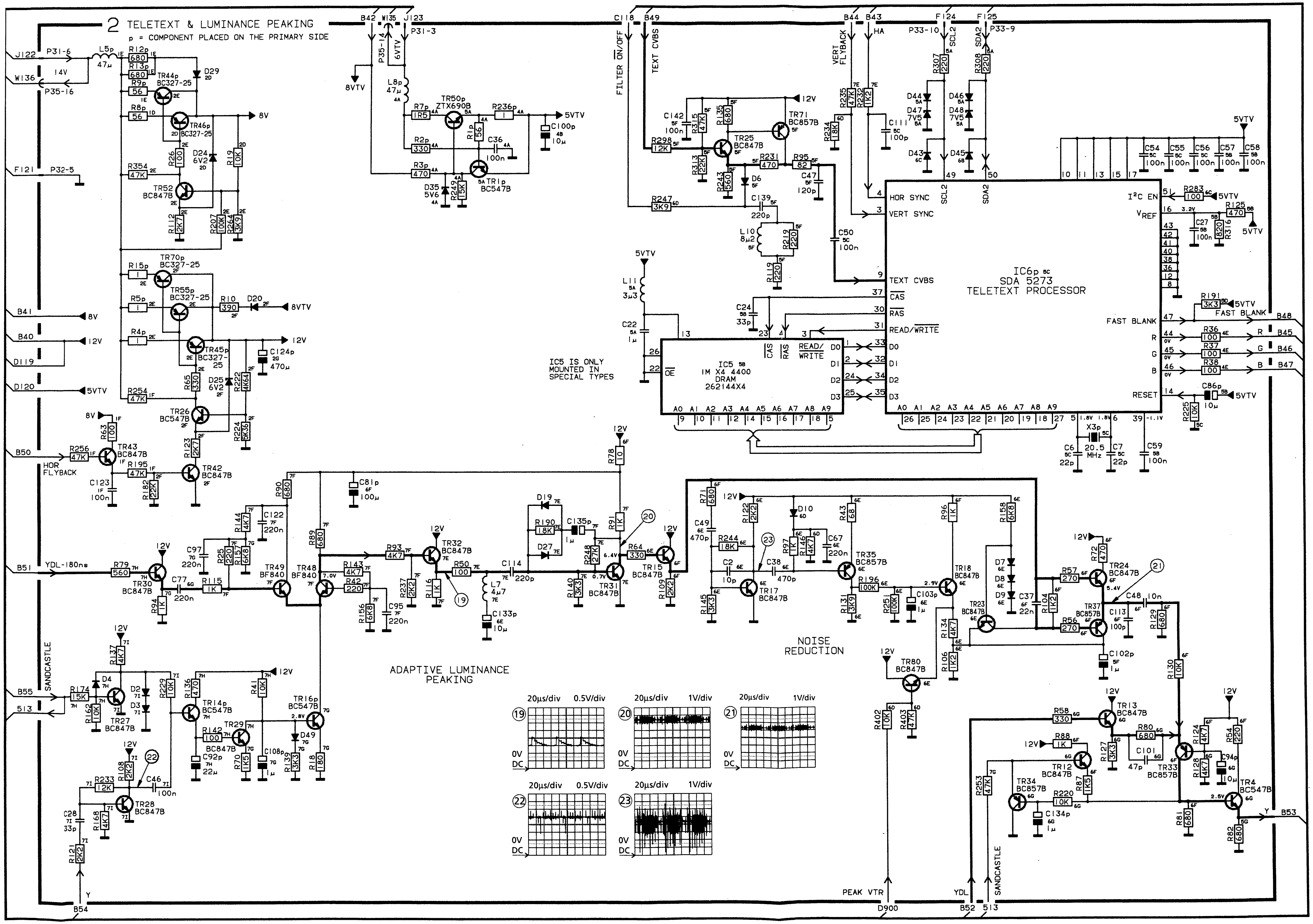
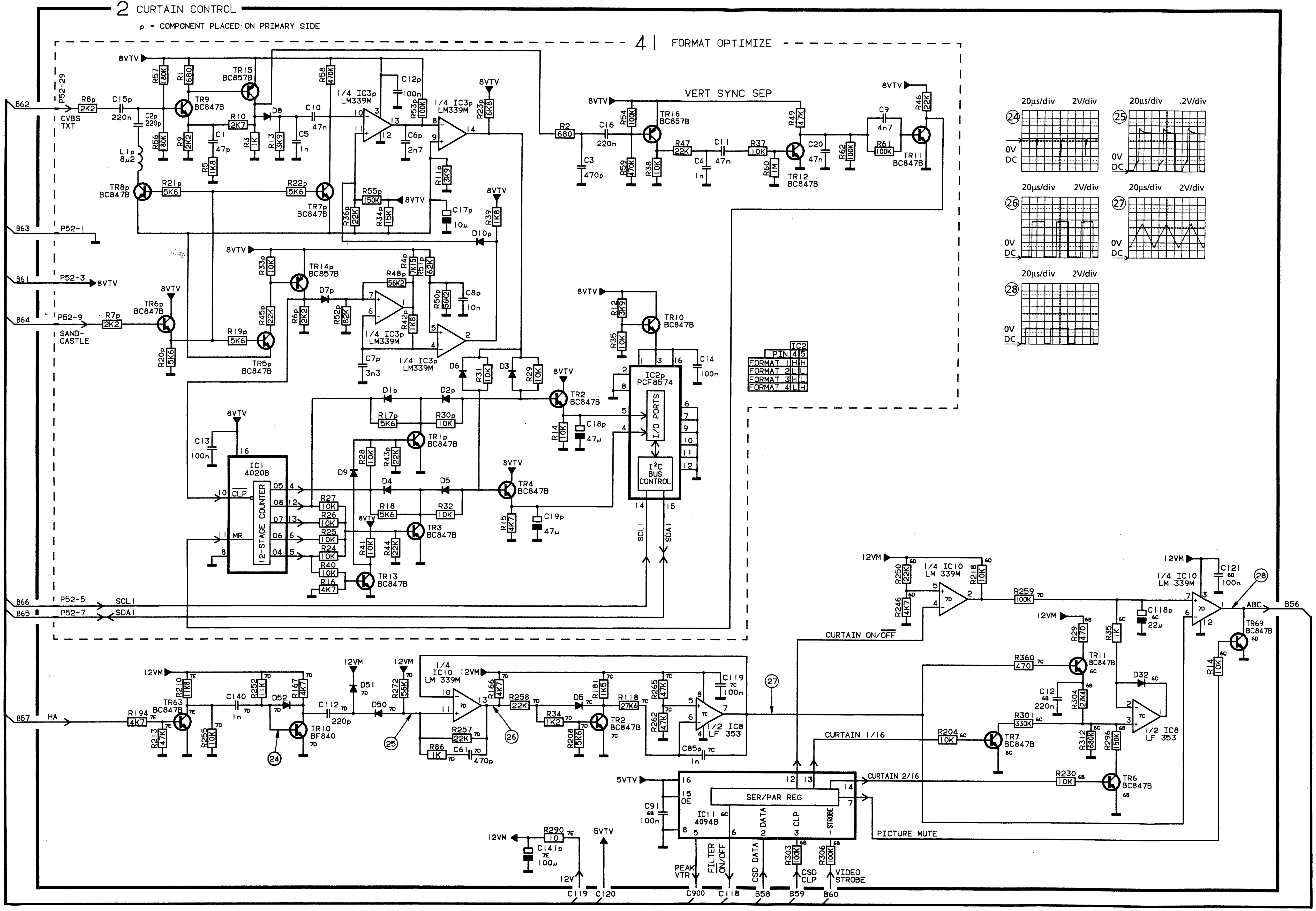

2 TELETEXT & LUMINANCE PEAKING
p = COMPONENT PLACED ON THE PRIMARY SIDE
J122
P31-6
W136
P35-16
14V
L5p 47µ
R12p 680
R13p 680
R9p 56
R8p 56
TR44p BC327-25
TR46p BC327-25
D29
8V
R26 100
D24 6V2
R19 10K
R354 47K
TR52 BC847B
R112 2K7
R207 100K
R264 3K9
F121
P32-5
TR70p BC327-25
R15p 1
R5p 1
TR55p BC327-25
R10 390
D20
8VTV
R4p 1
TR45p BC327-25
C124p 470µ
12V
R65 330
D25 6V2
R222 4K64
R254 47K
5VTV
TR26 BC547B
R224 3K36
R123 2K7
B41
B40
D119
D120
8V
R63 100
B50
HOR FLYBACK
R256 47K
TR43 BC847B
R195 47K
TR42 BC847B
C123 100n
R182 22K
B42
W135
J123
P31-3
P35-14
6VTV
8VTV
L8p 47µ
TR50p ZTX690B
R7p 1R5
R236p 1
5VTV
C100p 10µ
R1p 56
C36 100n
R2p 330
R3p 470
TR1p BC547B
D35 5V6
R249 15K
C118
B49
FILTER ON/OFF
TEXT CVBS
C142 100n
R315 47K
R135 680
TR71 BC857B
R298 12K
TR25 BC847B
R313 22K
R243 560
D6
R231 470
R95 82
C47 120p
R247 3K9
C139 220p
L10 8µ2
R219 220
R119 220
C50 100n
B44
B43
VERT FLYBACK
HA
R235 47K
R232 1K2
R234 18K
C111 100p
F124
P33-10
SCL2
R307 220
F125
SDA2
P33-9
R308 220
D44
D47 7V5
D43
D46
D48 7V5
D45
5VTV
C54 100n
C55 100n
C56 100n
C57 100n
C58 100n
HOR SYNC
VERT SYNC
SCL2
SDA2
I²C EN
VREF
R283 100
R125 470
R316 820
C27 100n
IC6p
SDA 5273
TELETEXT PROCESSOR
TEXT CVBS
CAS
RAS
READ/WRITE
D0
D1
D2
D3
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9
FAST BLANK
R
G
B
RESET
R191 3K3
FAST BLANK
B48
R36 100
R37 100
R38 100
B45
B46
B47
C86p 10µ
R225 10K
X3p 20.5 MHz
C6 22p
C7 22p
C59 100n
5VTV
L11 3µ3
C24 33p
C22 1µ
IC5
IM X4 4400
DRAM
262144X4
OE
CAS
RAS
READ/WRITE
IC5 IS ONLY MOUNTED IN SPECIAL TYPES
12V
R78 10
C81p 100µ
R90 680
R144 27K
C122 220n
C97 220n
R25 220
R157 6K8
R89 680
B51
YDL-180ns
R79 560
TR30 BC847B
C77 220n
R115 1K
R94 1K
TR49 BF840
TR48 BF840
R93 4K7
TR32 BC847B
R143 4K7
R42 220
R50 100
R237 2K2
R116 1K
R156 6K8
C95 220n
C114 220p
L7 4µ7
C133p 10µ
D19
R190 18K
C135p 1µ
D27
R248 27K
R140 3K3
TR31 BC847B
R91 1K
R64 330
TR15 BC847B
R109 2K2
R71 680
C49 470p
R122 2K2
R244 18K
C2 10p
TR17 BC847B
R145 3K3
C38 470p
D10
R97 1K
R146 4K7
C67 220n
R43 68
TR35 BC857B
R196 100K
R131 3K9
R251 100K
C103p 1µ
R96 1K
TR18 BC847B
R158 6K8
D7
D8
D9
C37 22n
R104 1K2
TR23 BC847B
R134 4K7
R106 1K2
NOISE REDUCTION
R72 470
TR24 BC847B
R57 270
TR37 BC857B
R56 270
C113 100p
C48 10n
R129 680
C102p 1µ
R130 10K
TR80 BC847B
R402 10K
R403 47K
R58 330
TR13 BC847B
R80 680
C101 47p
TR33 BC857B
R88 1K
TR12 BC847B
R127 3K3
R87 1K5
R253 47K
TR34 BC857B
R220 10K
C134p 1µ
R124 4K7
R54 220
R128 4K7
C94p 10µ
TR4 BC547B
R81 680
R82 680
Y
B53
B55
513
SANDCASTLE
R174 15K
D4
TR27 BC847B
R162 10K
D2
D3
R229 10K
R137 4K7
R136 470
TR14p BC547B
R142 100
TR29 BC847B
C92p 22µ
R70 1K5
R41 10K
C108p 1µ
D49
R139 3K3
TR16p BC547B
R18 180
ADAPTIVE LUMINANCE PEAKING
R108 2K2
R233 12K
C46 100n
TR28 BC847B
C28 33p
R168 4K7
R121 2K2
Y
B54
PEAK VTR
D900
YDL
SANDCASTLE
B52
513
20µs/div 0.5V/div
20µs/div 1V/div
20µs/div 1V/div
20µs/div 0.5V/div
20µs/div 1V/div
⑲
⑳
㉑
㉒
㉓
0V
DC

DIAGRAM D CURTAIN CONTROL & FORMAT OPTIMIZE (NEW VERSION, FAST TEXT)

On the PCB's first produced the coordinate system has been turned 180 degrees in relation to the old PCB. The co-ordinate nos. on the diagrams refer to the PCB drawing on page 11-2.


2 CURTAIN CONTROL
p = COMPONENT PLACED ON PRIMARY SIDE
4 FORMAT OPTIMIZE
VERT SYNC SEP
B62
CVBS TXT
B63 P52-1
B61 P52-3 8VTV
B64 P52-9 SAND-CASTLE
B66 P52-5 SCL I
B65 P52-7 SDA I
B57 HA
B56
8VTV
12VM
5VTV
TR15 BC857B
TR9 BC847B
TR8p BC847B
TR7p BC847B
TR14p BC857B
TR6p BC847B
TR5p BC847B
TR16 BC857B
TR12 BC847B
TR11 BC847B
TR10 BC847B
TR2 BC847B
TR1p BC847B
TR4 BC847B
TR3 BC847B
TR13 BC847B
TR63 BC847B
TR10 BF840
TR69 BC847B
TR7 BC847B
TR6 BC847B
1/4 IC3p LM339M
IC1 4020B 12-STAGE COUNTER
CLP
MR
IC2p PCF8574
I/O PORTS
I²C BUS CONTROL
SCL I
SDA I
1/4 IC10 LM 339M
1/2 IC8 LF 353
IC11 4094B
SER/PAR REG
OE
DATA
CLP
STROBE
CURTAIN ON/OFF
CURTAIN 1/16
CURTAIN 2/16
PICTURE MUTE
ABC
PEAK VTR
FILTER ON/OFF
CSD DATA
CSD CLP
VIDEO STROBE
12V
C119
C120
C900
C118
B58
B59
B60
20µs/div 2V/div
20µs/div .2V/div
0V
DC
㉔
㉕
㉖
㉗
㉘

	IC2	
PIN	4	5
FORMAT 1	H	H
FORMAT 2	L	L
FORMAT 3	H	L
FORMAT 4	L	H

SUPER-FLAT PICTURE TUBE

During the production a new Super-flat picture tube has been introduced. This has caused some modifications on PCB5 Deflection & EHT. The new PCB5 can not be used together with the old picture tube.
The new PCB5 can be recognized by a label on one of the heat sinks saying "S. FLAT".
The new picture tube can be recognized by only one connector on the deflection coil PCB. Previously this PCB had two connectors.

PCB5 **Old picture tube** 8008366		**PCB5** **Super-flat picture tube** 8008725		
C8	2.2nF	C8	4010402	4.7nF 10% 50V
C13	3.9nF	C13	4100316	4.3nF 5% 2kV
C53	10nF	C53	4100317	12nF 5% 2kV
C54	27nF	C54	4100318	20nF 5% 630V
C56	470nF	C56	4100319	390nF 5% 400V
C59	470nF	C59	4130319	390nF 5% 400V
C63	330nF	C63	4130234	470nF 10% 63V
L53	900µH	L53	8024072	2.6mH
S7	7400425	S7	7400438	
R23	6.5kΩ	R23		10kΩ 5% 1/4W
R30	22kΩ	R30		18kΩ 5% 1/4W
R36	270kΩ	R36		220kΩ 5% 1/4W
R37	560kΩ	R37		270kΩ 5% 1/4W
R42	5.6kΩ	R42		6.8kΩ 5% 1/4W
R64	0.22Ω	R64		0.47Ω 5% 1/4W
R81	560Ω	R81		270Ω 5% 1/4W
		C26	4130230	100nF 20% 63V, added

C26 is mounted in parallel to R42

NEW MECHANICAL PARTS

See exploded view page 4-1

9001	3320303	Frame
9003	8200107	Picture tube Super-Flat
1	2058020	Screw f/picture tube, upper
4	2058021	Screw f/picture tube, lower

Setting Up Guides

3503702	Danish
3503703	Swedish
3503704	Finnish
3503705	English
3503706	German
3503707	Dutch
3503708	French
3503709	Italian
3503710	Spanish

Owner's Manuals

3501685	Danish
3501686	Swedish
3501687	Finnish
3501688	English
3501689	German
3501690	Dutch
3501691	French
3501692	Italian
3501693	Spanish

ADJUSTMENT IN SERVICE MODE SEE SECTION 5, GEOMETRY ADJUSTMENTS:

Vertical s-correction (Vsc)

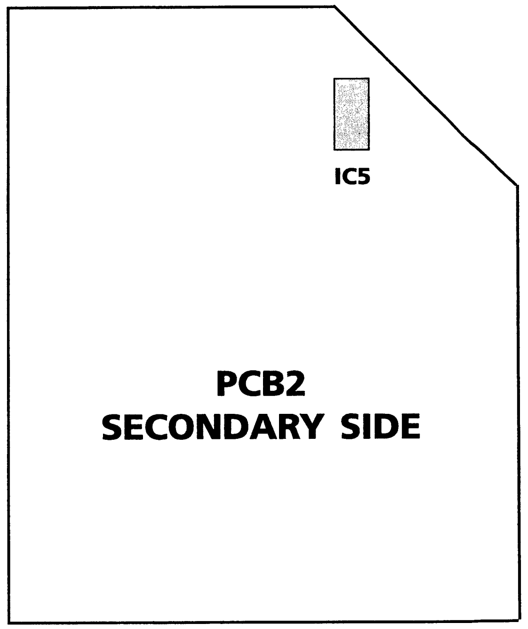
- Adjust the vertical s-correction (Vsc) to the correct geometry.

SOFTWARE VERSIONS

Version	Part no.		
1.2	8342566	IC5 (Fast text) must **not** be mounted on PCB2 (Placed on the secondary side see fig.1)	Picture tube, old version
2.0	8342832	IC5 (Fast text) **must** be mounted on PCB2 (Placed on the secondary side see fig. 1)	Picture tube, old version
2.1	8342885	IC5 (Fast text) **must** be mounted on PCB2 (Placed on the secondary side see fig. 1)	Picture tube, new version (SF)

Version 2.0 and 2.1 is **not** compatible to previous version.

Fig. 1



During the production, PCB 2 Video/Chroma & Teletext, has been modified (Fast Text).

Old version:		**New version:**		
C22	100nF	C22	4010323	1µF 16V
C25		Deleted		
C143		Deleted		
		D60	8300482	LL 4148, added
L1	8020749	L1	8021132	
		L11	8020822	3.3µH, added
R24	8.25kΩ	R24		10kΩ 5% 1/10W
R234	22kΩ	R234		18kΩ 5% 1/10W
		R400		2.2kΩ 2% 1/4W, added
		R402		10kΩ 5% 1/8W, added
		R403		47kΩ 5% 1/8W, added
		IC5	8342358	1MX4 4400 DRAM, added
		TR80	8320755	BC847B, added